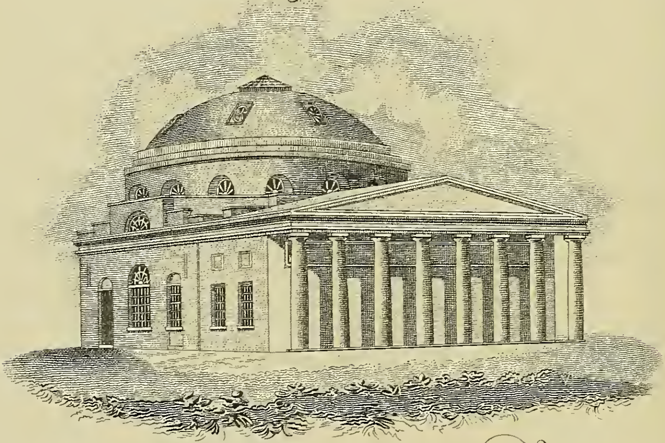
JUL 1 1

LIBRARY
OF THE
School of Medicine



University of Maryland

Digitized by the Internet Archive
in 2011 with funding from
LYRASIS Members and Sloan Foundation

http://www.archive.org/details/bulletinofuniver3434

VOLUME 34 NUMBER 1

BULLETIN

OF THE

SCHOOL *of* MEDICINE

UNIVERSITY OF MARYLAND

JULY, 1949

1807 · 1856 · 1920

PUBLISHED FIVE TIMES A YEAR
(JANUARY, APRIL, JULY, SEPTEMBER, AND OCTOBER)

Lombard and Greene Streets
Baltimore 1, Md.

L

Bulletin of the School of Medicine, University of Maryland

BOARD OF EDITORS

Maurice C. Pincoffs, B.S., M.D., *Chairman*
Carl D. Clarke, Ph.D., *Managing Editor*
Frances M. Blackburn, B.A., *Associate Editor*
John C. Krantz, Jr., Sc.D., Ph.D.
C. Gardner Warner, A.B., M.D.
Andrew C. Gillis, M.A., M.D., LL.D.
Louis A. M. Krause, M.D.
Walter D. Wise, M.D.
Otto C. Brantigan, B.S., M.D.
John A. Wagner B.S., M.D.

Business Address	Lombard and Greene Streets, Baltimore 1, Maryland.
Communications	Original articles, books for review, letters, etc., should be addressed to the Managing Editor, Bulletin of the School of Medicine, University of Maryland, Lombard and Greene Streets, Baltimore 1, Maryland. All matter concerning the Alumni Association should be sent to John A. Wagner M.D., Secretary of Medical Alumni Association, University of Maryland, Lombard and Greene Streets, Baltimore 1, Maryland.
Opinions	The Editors do not hold themselves responsible for the views expressed by authors or in signed editorials.
Articles	The Board of Editors will give to any paper a sympathetic reception, but reserves the right to return to the author any article not deemed suitable to the purposes of the Bulletin. Articles are accepted subject to the usual editorial revisions and with the understanding that they have not been published elsewhere.
Manuscript	Manuscript should be typewritten, double-spaced, and the original, not the carbon copy, supplied. Bibliographies should give the name of the author, the title of the article, the name of the journal or book in which published, the volume, the page, and the year in the order mentioned.
Illustrations	A reasonable number of half tones and line etchings will be furnished by the Bulletin, provided the photographs and drawings supplied by the author are satisfactory for reproduction.
How to Obtain the Bulletin	The Bulletin is sent free to every alumnus whose residence can be located. Those not receiving the Bulletin should notify the Secretary of the Medical Alumni Association who will be glad to add such names to the mailing list.
Change of Address	The alumni can help keep the mailing list up-to-date by filling out the form provided for that purpose on the inside of the back cover.
Nonreceipt of Copy	In the event of failure of the Bulletin to reach an alumnus, a line to this effect will be greatly appreciated.
Books for Review	After the review of books these become the property of the Library of the School of Medicine, University of Maryland.
Advertisements	The Bulletin carries no advertisements.
Publishers	The Faculty of Physic, University of Maryland, publishes the Bulletin.
Reprints	Reprints may be purchased from the printers according to the schedule on the order blank enclosed with the galley proof. The order may be mailed direct to the printers, or, if desired, transmitted through the office of the Editor.

Made in United States of America

Md. room

BULLETIN

OF THE

SCHOOL *of* MEDICINE

UNIVERSITY OF MARYLAND

VOLUME 34 No. 1

Publishers:
Faculty of Physic
University of Maryland
Baltimore

PUBLISHED FIVE TIMES A YEAR
(JANUARY, APRIL, JULY, SEPTEMBER AND OCTOBER)

Lombard and Greene Streets
Baltimore 1, Md.

Entered as second-class matter June 16, 1916, at the Postoffice at Baltimore, Maryland under the Act of August 24, 1912.

BULLETIN
OF THE
SCHOOL OF MEDICINE
UNIVERSITY OF MARYLAND

Vol. 34 JULY, 1949 No. 1

THE CLINICAL SIGNIFICANCE OF POTASSIUM DEFICIENCY

J. W. HOLLINGSWORTH, M.D.*†

DURHAM, N. C.

INTRODUCTION

Within the last few years there has been a revival of interest in the metabolism of potassium, and the clinical occurrence of hypokaliemia in a wide variety of disease states has been recognized. The purpose of this paper is to review those conditions in which loss of potassium from the body is encountered, and to note the clinical and biochemical disorders found in disease.

PERIODIC PARALYSIS

The syndrome of periodic paralysis is characterized clinically by intermittent attacks of flaccid paralysis of the muscles of the extremities, with loss of deep tendon reflexes and loss of excitability to electric stimulation. The disease is usually familial, but sporadic cases occur frequently.

The attacks usually come on at night. Various causes for their precipitation have been elicited from patients. These are exposure to cold, excessive fatigue, and particularly the ingestion of a large meal. Attacks of varying frequency occur, with a duration of a few hours to 3 or 4 days. Recovery is complete and spontaneous (1).

Clinically the paralysis usually begins peripherally in the legs and progresses centrally. All voluntary muscles may be involved except those of the face, mouth, and throat, the accessory muscles of respiration and deglutition, and the rectal and bladder sphincters. At times, however, the

---

* From the Department of Medicine, School of Medicine, Duke University, Durham, N. C.

† Received for publication April 19, 1949.

muscles of respiration and deglutition are involved and the outcome may be fatal unless therapy is instituted promptly (2). Involvement is always bilaterally equal.

More recently evidence of cardiac dysfunction as revealed by electrocardiographic changes during the attacks has been noted by several observers. Stall and Nisnewitz (3) demonstrated prolongation of the auriculo-ventricular conduction time and flattening of the T waves during the attack. Stewart, Smith, and Milhorat (4) showed even more marked conduction delay in their patient, with completely normal electrocardiograms before and after attacks. These changes are directly contrary to the effects of potassium intoxication, when the characteristic electrocardiographic change is elevation of the T waves (5, 6).

The association of lowered serum potassium with the attacks was first noted in 1934 by Biemond and Daniels (7), who were reporting a family afflicted by both periodic paralysis and progressive muscular atrophy. They noted a lowering of serum potassium from a normal value of 17.9 mg. per cent to 13.4 mg. per cent during an attack. Their patient also had a lowering of serum phosphorus and lactic acid. These observers were not aware of the significance of such findings, but subsequently electrolyte changes in many cases have been studied.

In 1936 Aitken and his co-workers (8) carefully studied a patient with this disease. They were able to induce attacks by oral administration of glucose, by injection of insulin, or by combination of these two procedures. During such attacks they noted a fall in serum potassium, which usually could be related to a fall in blood sugar level. Associated with the fall in serum potassium was a constant lowering of serum phosphorus and an occasional lowering of serum magnesium. Their patient responded well to potassium chloride therapy, and the authors felt that an abnormal instability of potassium in the serum might be the mechanism of the paralysis. They also pointed out that much lower serum potassium levels have been reported in other conditions without the development of paralysis, and postulated an abnormal ability of the serum potassium plus an increased sensitivity of the neuro-muscular apparatus to changes in potassium concentration as the basic etiology of the disease.

In the last 10 years numerous cases of the disease have been studied, with essentially similar results. Allott and McArdle (9) showed that the lowered serum potassium was the result of an internal shift of potassium ions, since there is no increased excretion of potassium before or after attacks. Danowski et al. (10) have recently confirmed this observation but also noted that administered potassium was retained by the patients in amounts much above the normal controls, and postulated a chronic intracellular potassium deficiency. This deficiency is assumed, under periods of stress, to be replaced by serum potassium, leading to attacks of paralysis.

Various methods of inducing attacks have been used, including starvation, ingestion of glucose, and administration of insulin or adrenalin. All of these methods have one common factor: mobilization of blood glucose, with eventual utilization of glucose in the tissues. The significance of this fact is not entirely clear, but Kerr (11) has shown that in both normal and diabetic animals there is a fall in serum potassium and phosphorus following insulin injection, associated with the fall in blood sugar. Fenn (12) has demonstrated that when glycogen is formed in the liver it is accompanied by increases in liver content of potassium. Harrop and Benedict (13) noted an increase in muscle potassium and phosphorus after insulin, associated with a fall in serum levels of these substances. In a recent review article, Gass and his co-workers (14) attempted to localize radioactive potassium given to a patient with periodic paralysis during an attack. Unfortunately, the technical procedure was unsatisfactory, and they were unable to confirm suspected increases in radioactive potassium in the muscles or in the liver.

Even more difficult to fit into the known facts is the frequent occurrence of periodic paralysis in patients with hyperthyroidism. Seed (15) reported a patient of this type whose attacks were poorly relieved by potassium administration, but who was completely cured by the use of propylthiouracil.

In summary, periodic paralysis is a complex metabolic disturbance, characterized by lowering of potassium and phosphorus in the blood, and intimately associated with carbohydrate metabolism. The clinical symptoms of the disease are completely relieved by the administration of potassium salts. Whether the primary deficiency is an inability of the body cells to retain potassium (10) remains to be settled.

SEVERE DEHYDRATION

For many years it has been known that in severe diarrhea with dehydration in infants there is a loss of body potassium, but only recently has the magnitude of this loss and the clinical significance of it been pointed out. Early workers analyzed the muscle of infants dying of diarrhea and reported a 30 per cent reduction of potassium and a 10 to 20 per cent reduction of total phosphorus. A host of observers noted a loss of potassium during balance studies on infants with diarrhea, associated with a loss of sodium, chloride, water and nitrogen. Little importance was attached to the potassium loss by these earlier workers, probably because of the belief that the potassium loss was proportional to the loss of nitrogen from tissue breakdown and not the result of the passage of the ion from its intracellular position.

In the last few years, however, it has been demonstrated that potassium readily passes through the cellular membrane in conditions of dehydration, and that sodium may move intracellularly to replace this loss. These shifts in intracellular and extracellular electrolytes have completely altered concepts of electrolyte disturbance in disease.

The significance of these shifts was fully elucidated by the work of Darrow (16) in 1946, who performed careful balance studies on 6 infants during recovery from severe diarrhea. In addition to the well known retention of salt and water during the recovery phase, he noted a retention of potassium equal to 20 to 25 per cent of the total body content of potassium if potassium salts were added to the therapy.

He noted in some patients that, after addition of potassium to the therapy, there was a reduction of the acidosis out of proportion to the amount of sodium base retained. These changes are attributed to the fact that during rehydration, sodium ions leave the extracellular fluid compartment to replace the lost potassium ions. Additions of potassium to the electrolyte replacement therapy, therefore, tend to relieve these sodium ions of their intracellular duty and to allow their use in correcting the serious loss of base in the extracellular fluids. Darrow points out that the loss of 25 per cent of the body potassium is equivalent to a loss of 50 per cent of the body sodium. The replacement of this large amount of potassium by extracellular sodium may play a large role in the severity of the acidosis.

Elkinton and his group (17) have confirmed the work of Darrow and others, and have carefully defined the limits of the intracellular potassium-sodium shifts as they exist in health and in disease.

Although Darrow and other observers have noted a marked loss of phosphorus during the process of dehydration, in only one of the 6 balance studies reported was there a marked retention of phosphorus during recovery. The significance of this is not clear.

Because of this marked loss of potassium and because of certain clinical characteristics seen terminally in dehydrated infants, namely, decreased muscle tone, weakness, and slowing of the pulse, Govan and Darrow (18) introduced potassium chloride into their routine therapy of infantile diarrhea. In this therapy they use slow intravenous subcutaneous injection of a solution containing 2 gm. potassium chloride, 3 gm. sodium chloride, 40 cc. molar lactate, and 710 cc. of distilled water. The total amount used was from 80 to 150 cc. per kilogram of body weight per day. Later, when the condition of the patient permitted they used oral potassium.

On this regime there was marked clinical improvement of the infants in a short time. The mortality rate in 53 infants not receiving potassium was 33 per cent; in 50 infants treated with potassium the mortality rate was 6 per cent. Unfortunately, however, the infants treated by routine methods were during the first half of the diarrhea season while those treated with potassium were during the last half of the season. The results, therefore, are possibly not as valid as if alternate cases were chosen for potassium administration.

The only complication of the therapy which endangered life occurred in 1 infant who developed severe potassium intoxication with heart block. This infant was anuric at the onset of therapy, and as a result of this experience the authors advised against the administration of potassium until the urine volume increased. A minor complication of therapy, consisting of a diffuse, generalized erythema followed by desquamation, occurred in 5 patients.

A recent case report of an infant with prolonged diarrhea is of interest. Gamble (19) reports an 8 months old infant, who, in addition to electrocardiographic changes, was felt to have developed cardiac enlargement and myocardial failure because of hypokaliemia following a month of diarrhea.

DIABETIC ACIDOSIS

Interest in this phase of potassium deficiency has been stimulated by the report of Holler (20) of a patient with severe potassium deficiency occurring during therapy of diabetic acidosis and coma. This patient, an 18 year old girl in deep coma for 6 hours, was treated in the usual manner with good response. A few hours later, however, she developed marked weakness and respiratory difficulty requiring the use of a respirator. Potassium deficiency was suspected, and a serum potassium of 9.8 mg. per cent was obtained at that time. An electrocardiogram showed the typical finding of hypokaliemia, with depressed T waves, slowed conduction and depression of the ST segment. Following the administration of potassium, clinical and electrocardiographic improvement was dramatic.

Several factors probably play a part in the loss of potassium in diabetic acidosis. As pointed out before, in severe dehydration a loss of intracellular potassium may occur. This loss may be further accentuated by the "flushing out" effects of the large fluid volumes currently used in therapy of the condition. Another factor is that insulin administration with accompanying utilization of blood glucose results in a marked lowering of the serum potassium. This effect is probably brought about by the formation of glycogen in the muscles and the liver, a process in which potassium and phosphorus are utilized (12, 13). Incidentally, Harrop and Benedict (13) in 1924, in their original paper on electrolyte changes following insulin, reported 2 patients in coma with a fall in serum potassium to 9.4 mg. per cent.

Martin and Wertman (21) reported careful studies of serum levels of potassium, magnesium, and calcium in diabetic acidosis. They noted a fall in serum potassium in 56 per cent of the cases, with 1 patient reaching a low of 7.4 mg. per cent. Serum magnesium levels were usually depressed also. Associated with the low potassium levels many patients exhibited muscular weakness.

Following the report of Holler (20) workers in this clinic recalled similar clinical cases, and potassium therapy is now a routine part of treatment of diabetic acidosis. Nicholson and Branning (22) reported 2 patients, 1 of whom died with symptoms of respiratory paralysis, with a serum potassium of 9.3 mg. per cent at the time of death. Another patient developed muscle weakness and respiratory difficulty with a serum potassium of 7.4 mg. per cent. Potassium chloride was administered and within 2 hours respirations were normal and the patient appeared greatly improved.

At about the time of Holler's report, a Dutch group (23) noted a similar case occurring during recovery from severe coma. They felt that their patient had cardiac dilatation and sudden myocardial failure on the basis of potassium deficiency—a confirmation of the findings of Gamble (19).

Careful balance studies of these changes in diabetic acidosis have not as yet been done, so that the full magnitude of the electrolyte loss is not known. However, Butler's group (24) confirmed the potassium and phosphorus loss, and suggested the use of potassium phosphate in therapy. Danowski et al. (25) used potassium in the recovery phase of acidosis and noted retention of 98 to 406 milliequivalents of potassium in 8 patients. Even then, the intracellular deficit was not entirely replaced.

An interesting study on the therapy of diabetic acidosis with sodium phosphate has been the only serious attempt at replacing the marked phosphorus loss. These workers (26) emphasize the prominent place of phosphorus in carbohydrate metabolism, and the possibility of delayed glycogenesis because of the lack of phosphorus for combination with glucose. Their therapeutic results with a buffered sodium phosphate solution are promising.

As an outcome of all these studies, it seems evident that the therapy of diabetic acidosis must be directed more towards total electrolyte replacement, rather than replacement of only salt and water, if the mortality rate of the condition is to decline.

CHRONIC NEPHRITIS

In chronic renal disease, both clinical and experimental data have demonstrated that retention of potassium may occur, with death resulting from potassium intoxication (5, 6, 27, 28, 29). However, Brown and her co-workers (30) have reported 2 cases of chronic renal disease with inability to retain potassium and with laboratory, clinical, and electrocardiographic evidences of potassium deficiency. Sherry (31) has recently had a case in which 25 gms. of potassium chloride daily were insufficient to correct the potassium loss by the kidneys.

ADDISON'S DISEASE TREATED WITH DESOXYCORTICOSTERONE

Since the introduction of desoxycorticosterone into the therapy of adrenal insufficiency in 1936, the effects of the drug on electrolyte metabolism have been extensively studied. Repeated results have shown that the drug tends to hold sodium in the body at the expense of excessive excretion of potassium. Ferrebee and his co-workers (32) demonstrated that dogs placed on relatively large doses had marked replacement of muscle potassium by sodium. These animals developed low serum potassium levels and flaccid paralysis, and died. The changes, moreover, were prevented by potassium supplements in the diet.

Clinically McGovack (33) reported a patient treated with desoxycorticosterone plus a high sodium, low potassium diet who became weak and finally died. Electrolytes at the time of death showed a serum sodium of 367 mg. per cent and a potassium of 8.2 mg. per cent. Thorn and Firor (34) also mention a patient treated with desoxycorticosterone who developed episodes of flaccid paralysis associated with hypokaliemia.

DEFECTIVE INTESTINAL ABSORPTION

Only recently has the marked potassium deficiency occurring in the various conditions causing steatorrhea been clinically noted. The defect in this condition is caused by combination of all bases—sodium, potassium, calcium, and magnesium—with the intestinal fats to form insoluble soaps. Poor intestinal absorption leads then to deficiency of these bases, with clinical symptomatology as the serum level falls. Harrison and his co-workers (35) have reported 2 such patients.

Engel, Martin, and Taylor (36) studied 1 patient with sprue in Duke Hospital who had severe potassium and calcium deficiency. On numerous occasions they were able to demonstrate in this woman the antagonistic action of these two cations at the neuro-muscular junction. Injections of intravenous potassium sufficient to raise the serum potassium level, produced overt tetany, while simultaneous administration of calcium and potassium prevented this phenomenon.

PROLONGED INTRAVENOUS ALIMENTATION

It has long been recognized that in surgical conditions requiring gastro-intestinal suction there is loss of more electrolytes than salt and water. However, the magnitude and the importance of these changes have not been re-evaluated in the light of modern fluid replacement therapy.

In 1939 Falconer and his group (37) reported electrolyte studies on a group of patients with intestinal obstruction, with special reference to the problem of potassium deficiency. They found that gastric suction fluid contained 2 to 4 times normal serum concentration of potassium, and found that this group of patients had a lowered serum potassium. Their conclusions were that Ringer's solution would be adequate to replace this loss.

Nicholson and Spaeth (38) from this clinic reported briefly on 2 cases of uremia treated by colonic lavage through an appendecostomy or lower ileal intubation. In these cases electrolyte changes were rapid and dramatic, with changes from potassium intoxication to severe deficiency in a short time.

Potassium balance studies on 6 patients receiving nothing but intravenous feeding were done by Tarail and Elkinton (39). Four of these patients were on gastrointestinal suction. The conclusion was that the greatest potassium loss was not the result of loss from the gastrointestinal tract, but to constant renal excretion of potassium in the face of absent potassium intake.

Clinical potassium deficiency has not yet been reported in the surgical literature, but the importance of multiple electrolyte deficiency in patients on prolonged intravenous feeding is obvious.

SUMMARY

1. A review of the literature reveals that potassium deficiency may occur clinically in the following conditions: periodic paralysis, infantile diarrhea, diabetic acidosis, chronic renal disease, adrenal insufficiency treated with desoxycorticosterone, and the group of diseases characterized by steatorrhea. Biochemical potassium deficiency has been demonstrated in patients requiring intravenous feeding over a prolonged period, but the clinical syndrome of potassium deficiency has not been reported in this condition.

2. Clinically potassium deficiency is manifested by muscular weakness and/or paralysis, resulting from interference with the normal neuro-muscular transmission. The clinical observation of an irregular breathing with mental alertness can be observed. Electrocardiographic changes with low T waves and conduction delay may occur.

3. The possible therapeutic effect of potassium in these conditions is discussed.

BIBLIOGRAPHY

1. Talbott, John H.: Periodic Paralysis, Medicine **20:** 85, 1941.
2. Smith, William A.: Periodic Paralysis. Report of Two Fatal Cases, J. Nerv. & Ment. Dis. **90:** 210, 1939.
3. Stoll, Bernard and Nisnewitz, Samuel: Electrocardiographic Studies in a Case of Periodic Paralysis, Arch. Int. Med. **67:** 755, 1941.
4. Steward, Harold J., Smith, J. J., and Milhorat, A. T.: Electrocardiographic and Serum Potassium Changes in Familial Periodic Paralysis, Am. J. M. Sc. **199:** 789, 1940.
5. Winkler, A. W., Hoff, H. E., and Smith, P. K.: Electrocardiographic Changes and Concentration of Potassium in Serum Following Intravenous Injection of Potassium Chloride, Am. J. Physiol. **124:** 478, 1938.

6. Finch, Clement A., Sawyer, C. G., and Flynn, J. M.: Clinical Syndrome of Potassium Intoxication, Am. J. Med. **1:** 337, 1946.
7. Biemond, A. and Daniels, A. P.: Familial Periodic Paralysis and Its Transition Into Spinal Muscular Atrophy, Brain **57:** 91, 1934.
8. Aitken, R. S., Allott, E. N., Castleden, L. I. M., and Walker, M.: Observation on a Case of Familial Periodic Paralysis, Clin. Sc. **3:** 47, 1937.
9. Allott, E. N. and McArdle, B.: Further Observations on Familial Periodic Paralysis, Clin. Sc. **3:** 229, 1938.
10. Danowski, T. S., Elkinton, J. R., Burrows, B. A., and Winkler, A. W.: Exchanges of Sodium and Potassium in Familial Periodic Paralysis, J. Clin. Investigation **27:** 65, 1948.
11. Kerr, S. E.: The Effect of Insulin and of Pancreatectomy on the Distribution of Phosphorus and Potassium in the Blood, J. Biol. Chem. **78:** 35, 1928.
12. Fenn, W. O.: The Deposition of Potassium and Phosphate with Glycogen in Rat Livers, J. Biol. Chem. **128:** 297, 1939.
13. Harrop, G. A. and Benedict, Ethel M.: The Participation of Inorganic Substances in Carbohydrate Metabolism, J. Biol. Chem. **59:** 683, 1924.
14. Gass, Harvey, Cherkasky, M., and Savitsky, N.: Potassium and Periodic Paralysis, Medicine **27:** 105, 1948.
15. Seed, Linton: Periodic Paralysis in a Patient with Exophthalmic Goiter Controlled by 6-Propylthiouracil, West. J. Surg. **55:** 640, 1947.
16. Darrow, D. C.: The Retention of Electrolyte During Recovery from Severe Dehydration Due to Diarrhea, J. Pediat. **28:** 515, 1946.
17. Elkinton, J. R., Winkler, A. W., and Danowski, T. S.: Transfers of Cell Sodium and Potassium in Experimental and Clinical Conditions, J. Clin. Investigation **27:** 74, 1948.
18. Govan, C. D. and Darrow, D. C.: The Use of Potassium Chloride in the Treatment of Dehydration of Diarrhea in Infants, J. Pediat. **28:** 541, 1946.
19. Gamble, Alice H., Wiese, Hilda F., and Hansen, Arild E.: Marked Hypokaliemia in Prolonged Diarrhea. Possible Effect on the Heart, Pediatrics **1:** 58, 1948.
20. Holler, Jacob W.: Potassium Deficiency Occurring During the Treatment of Diabetic Acidosis, J. A. M. A. **131:** 1186, 1946.
21. Martin, Helen E. and Wertman, Maxine: Serum Potassium, Magnesium, and Calcium Levels In Diabetic Acidosis, J. Clin. Investigation **26:** 217, 1947.
22. Nicholson, W. M. and Branning, W. S.: Potassium Deficiency in Diabetic Acidosis, J. A. M. A. **134:** 1292, 1947.
23. Frenkel, M., Groen, J., and Willebrands, A. F.: Low Serum Potassium Level During Recovery from Diabetic Coma, Arch. Int. Med. **80:** 728, 1947.
24. Butler, A. M., Talbot, N. B., Burnett, C. H., Stanbury, J. B., and McLachlan, E. A.: Metabolic Studies in Diabetic Coma, Tr. A. Am. Physicians **60:** 102, 1947.
25. Danowski, T. S., Peters, J. H., Rathbun, J. C., Quashnock, J. M., and Greenman, L.: Studies in Diabetic Acidosis and Coma, with Particular Emphasis on the Retention of Administered Potassium, J. Clin. Investigation **28:** 1, 1949.
26. Franks, Maurice, Berris, R. F., Kaplan, N. O., and Myers, G. B.: Metabolic Studies in Diabetic Acidosis. II. The Effect of the Administration of Sodium Phosphate, Arch. Int. Med. **81:** 42, 1948.
27. Finch, Clement A., and Marchand, J. F.: Cardiac Arrest by the Action of Potassium, Am. J. M. Sc. **206:** 507, 1943.
28. Hoff, H. E., Smith, P. K., and Winkler, A. W.: The Cause of Death in Experimental Anuria, J. Clin. Investigation **20:** 607, 1941.
29. Keith, N. M. and Burchell, H. B.: Clinical Intoxication with Potassium: Its Occurrence in Severe Renal Insufficiency, Am. J. M. Sc. **217:** 1, 1949.

30. Brown, Madelaine R., Currens, J. H., and Marchand, J. F.: Muscular Paralysis and Electrocardiographic Abnormalities Resulting from Potassium Loss in Chronic Nephritis, J. A. M. A. **124:** 545, 1944.
31. Sherry, Sol, Eichna, L. W., and Earle, D. P.: The Low Potassium Syndrome in Chronic Nephritis, J. Clin. Investigation **27:** 556, 1948.
32. Ferrebee, J. W., Parker, Donald, Carnes, W. H., Gerity, Mildred K., Atchley, D. W., and Loeb, R. F.: Certain Effects of Desoxycorticosterone. The Development of 'Diabetes Insipidus' and the Replacement of Muscle Potassium by Sodium in Normal Dogs, Am. J. Physiol. **135:** 230, 1941.
33. McGavack, Thomas H.: Some Pitfalls in the Treatment of Addison's Disease, J. Clin. Endocrinol. **1:** 68, 1941.
34. Thorn, G. W. and Firor, Warfield M.: Desoxycorticosterone Acetate Therapy in Addison's Disease, J. A. M. A. **114:** 2517, 1940.
35. Harrison, H. E., Harrison, Helen C., Thompsett, R. R., and Barr, D. P.: Potassium Deficiency in Patients with Steatorrhea, Am. J. Dis. Child. (Proc.) **73:** 244, 1947.
36. Engel, Frank L., Martin, S. P., and Taylor, Haywood: On the Relation of Potassium to the Neurologic Manifestations of Hypocalcemic Tetany, Bull. Johns Hopkins Hosp. To Be Published.
37. Falconer, M. A., Osterberg, A. E., and Bargen, J. A.: Intestinal Obstruction in Man. Alterations in the Serum Bases and Their Significance, Arch. Surg. **38:** 869, 1939.
38. Nicholson, W. M. and Spaeth, Walter: Some Clinical Manifestations of Abnormal Potassium Metabolism, South. M. J. **42:** 77, 1949.
39. Tarail, Robert and Elkinton, J. R.: Potassium Deficiency and the Role of the Kidney in Its Production, J. Clin. Investigation **28:** 99, 1949.

PERIARTERITIS NODOSA

A Review with the Presentation of Seven Cases*†

WILLIAM M. STRAIGHT, M.D.

TAMPA, FLA.

Periarteritis nodosa is a form of inflammatory panarteritis affecting any of the medium-sized or small arteries, and accompanied by systemic symptoms of infection with added regional symptoms depending on the organs involved (1).

HISTORY

This disease was first described in the gross by Rokitansky in 1852, in a paper entitled, "The Formation of Aneurysms of Arteries in General, Except the Aorta, and Most of Its Important Primary Branches, With the Further Exception of the Cerebral Arteries." In 1866, Kaussmaul and Maier (2) gave the first complete description of the gross and microscopic findings and applied the name by which we now know the disease. For many years the diagnosis was chiefly a postmortem one and up to 1939 only 101 acceptable cases were reported in the English literature (3). In 1945, Wilson and Alexander reviewed 300 cases from the literature (4), and now there are over 500 cases reported.

INCIDENCE

The disease is relatively rare and has been reported occurring at all ages. The youngest cases on record are 10 and 37 days old (5), while the average age incidence in a series of 101 cases is 36.9 years (3). It occurs three to four times as frequently in males as in females in all series, except in 8 cases reported by Rackemann and Greene (6) of which 7 were females. Of the cases seen in this hospital 6 were males. No definite study of the racial incidence has been observed but 6 of the 7 cases seen here were negros.

ETIOLOGY

The etiology of periarteritis nodosa remains not definitely proved and has been the subject of much speculation and investigation. Eppinger thought the aneurysms were caused by failure of proper development of the elastic coat in many places in the arterial system, and he classed the disease among congenital aneurysms (7). Kaussmaul at the suggestion of

---

* From the Departments of Pathology and Medicine, Baltimore City Hospitals.

† Read before the joint session of the Maryland Pathology Society and Allegany Garrett Medical Society, May 22, 1948.

Virchow, tentatively mentioned lues as the cause, but the evidence has not sustained this (8). For a number of years periarteritis was thought to be a specific infectious disease. It was noted to occur spontaneously in a calf, cows, dogs and a herd of stags, but attempts to transmit the disease were unsuccessful. Von Haun stated he had transmitted the disease by inoculation of a patient's blood into a guinea pig from which an organ emulsion was made and a second pig inoculated reproducing the lesions (8). Harris and Friedrichs (9, 10) inoculated a rabbit with an emulsion from a kidney nodule of a typical case, then inoculated a second rabbit with an organ emulsion of this first rabbit. They describe more or less typical lesions of periarteritis in both animals, but state that the more typical lesions occurred in the second animal. Others (8, 11) were unable to repeat these findings. Metz is quoted as having produced periarteritis by injections of streptococci (12), but careful work by several investigators has failed to verify this (8). Most recently Collins and Goldie (13) have produced a polyarteritis which, "bears some resemblance to both polyarteritis nodosa and to rheumatic arteritis," in 2 of 8 pigs injected intravenously with cultures of Erysipelothrix rhusiopathiae.

Many years ago Aschoff mentioned the similarity between the lesions of periarteritis nodosa and those of rheumatic fever (8). In 1934, 4 cases were reported with typical Aschoff bodies in the myocardium and typical lesions of periarteritis nodosa in the other organs of the body (14). Vaubel (1932) and Masugi and Sato (1933) injected sensitized rabbits with horse serum and produced lesions which resembled periarteritis nodosa, thromboangiitis obliterans, and more closely rheumatic arteritis (15). Rich and Gregory (15, 16) using the same method produced anaphylactic hypersensitivity in rabbits and found after producing serum sickness in the animals both lesions typical of periarteritis nodosa and lesions, "with the basic characteristics of rheumatic carditis." Similarly Selye and co-workers have produced both nodules similar to Aschoff bodies in the myocardium and lesions of periarteritis nodosa in other organs by injections of desoxycorticosterone acetate in rats (17, 18, 19). The similarities between periarteritis nodosa and the collagen diseases have been noted frequently (20, 21, 22).

In 1923, Gerlach described adventitial inflammation with necrosis of the arterioles in the Arthus phenomenon (23). Gruber stated in 1925, that the severity of the arterial lesions in the absence of a causative agent, and the eosinophilia of the perivascular infiltrate led him to hypothesize an allergic inflammation of the arteries in periarteritis nodosa (24). Cases have been reported following serum sickness (23, 25, 26), sulfonamide sensitivity (23, 27, 28), iodine sensitivity (29), and dilantin sensitivity (30). To explain the production of periarteritis by drugs, Rich refers to the work of Landsteiner showing that drugs can combine with serum proteins and form an antigenically active molecule. He goes on to suggest that sensitization might be expected from bacterial and fungus proteins similarly. Many authors have pointed out the association of asthma and periarteritis, and they emphasize the fact that the asthma is usually of the intrinsic type and often severe and intractable. However, an allergic history is obtainable in only 18 to 25 per cent of the cases (4), and of the cases seen here only 2 gave an allergic history. The concept that periarteritis nodosa represents an allergic reaction of such severity that irreversible changes occur in the arteries has been repeatedly suggested (4, 31, 32). Lesions resembling those of periarteritis nodosa have been produced chiefly in rabbits subjected to serum sickness (15, 33). Fox and Jones (33) repeated the work of Rich and Gregory and produced lesions which they thought more closely resembled those of rheumatic fever than those of periarteritis nodosa. More recently Zeek and Smith (34) have been unable to verify the work of Rich and Gregory; however, their method differed from that of the latter investigators in that their shocking dose was 3 ml. on the twenty-ninth day while Rich and Gregory used 1 ml. on the eighteenth day and 10 ml. on the twentieth day. Although the role of histamine in human allergy remains unsettled, it is of interest that Bahrman is quoted as having produced the lesions of periarteritis by repeated injections of large doses of histamine (4).

Hypertension is a frequent finding in periarteritis and is usually said to be a late development although it may precede the periarteritis as in one of the author's cases. Frequently it is difficult to differentiate periarteritis from malignant nephrosclerosis. Chiefly incidental to the study of hypertension, lesions similar to those of periarteritis nodosa have been produced by various methods causing hypertension: unilateral nephrectomy with a silver clip applied to the opposite renal artery (35), bilateral constriction of the renal arteries with silver clips (36, 37), envelopment of one kidney in cellophane (38), wrapping of the kidney with cotton and other methods (39), and the wrapping of one kidney with silk suture with the removal of the other or the wrapping of both kidneys with silk suture (12, 34). This work has been done on rats and dogs, and Cromartie believes that this is one of the most common types of arteritis in the rat although it resembles an uncommon lesion in man. Only Smith and Zeek (34) have attempted to control the factors of infection and allergic reaction to the materials introduced. Their results show that neither of these two factors accounted for the periarteritis, and they point out that the lesions were produced in rats which are notoriously resistant to anaphylactic sensitivity (15). They also found no lesions in the lungs and hypothesize that the low pressure in the lesser circulation accounts for this; this fact they use in support of their hypothesis that a rapidly produced hypertension is the cause of periarteritis. In general the incidence of the lesions they produced varied directly with the degree of hypertension obtained. However, many cases of proved periarteritis have no hypertension and lung lesions occur in only about 25 per cent of human cases. They point out that 7 of the 9 animals used by Rich and Gregory (15) developed acute diffuse glomerulonephritis although no blood pressures were recorded.

Periarteritis nodosa is reported to have occurred spontaneously in old rats on a diet of dried milk powder and ground wheat used in the course of a study on cardiovascular disease. The kidneys of these animals showed a glomerulonephritis (40, 41). Ham (42) has produced a periarteritis in over 50 per cent of rats receiving activated ergosterol or diets rich in calcium, phosphorous, and phosphoric acid. These animals showed extensive deposits of calcium in their arteries and kidneys. Finally lesions resembling periarteritis nodosa in the mesenteric vessels, lesions resembling Aschoff bodies in the myocardium and glomerulonephritis have been produced by Selye and co-workers (17, 18, 19), by injections of desoxycorticosterone acetate in rats on which a unilateral nephrectomy had been performed and which were receiving 1 per cent sodium chloride solution in place of drinking water. The latter two manipulations were to sensitize the animals, and suitable controls failed to develop the lesions. The animals showing the lesions were those in which hypertension developed. Selye states that he has also obtained lesions of periarteritis in unilaterally nephrectomized animals on salt solution which were exposed to cold, infection or other severe stress. He believes that any severe stress (cold, infection, protein injections, toxic substances, etc.) acts on the pituitary gland causing the release of adrenotropic hormone. This in turn acts on the adrenal cortex and causes the output of excessive corticoids, which cause protein breakdown and periarteritis nodosa (19). Since the lesions of periarteritis have been produced in so many diverse ways such an hypothesis would seem to warrent careful consideration.

PATHOLOGY

Periarteritis nodosa is primarily a disease of the medium-sized and small arteries in contrast to the capillary involvement of lupus erythematosus and the larger artery involvement of arteriosclerosis. Ophuls distinguishes four stages of the histologic aspects:

1. Infiltration of the adventitia with partly neutrophilic and partly eosinophilic polymorphonuclear leucocytes mixed with varying numbers of small lymphocytes and plasma cells.
2. Usually degenerative changes of the media with vacuolation, then destruction of the elastic fibers. This may occur early and be severe, producing hematomata and false aneurysms. The damaged muscle is then invaded by leukocytes.
3. Leukocytes reach the intima which may remain unaltered or collect fluid beneath it which hardens, becoming a hyaline material.

4. Finally proliferative changes appear in the adventitia with the appearance of epithelioid cells which promptly invade the diseased muscle. These cells form nodules rich in capillaries. Whether or not aneurysms form depends on the extent of muscle destruction and the resistance of the new fibrous tissue. Manges and Baehr (43) in 1921, reported a case that was submitted to laparotomy because of abdominal pain and was found to have periarteritic nodules in the mesenteric vessels. These showed extensive and dense infiltration of the periarterial and adventitial tissues with small round cells, plasma cells and polymorphonuclears. One month later a muscle biopsy showed no acute lesions, though many healed lesions were found. At autopsy 3 and ½ months after the operation, the medium-sized arteries throughout the body showed multiple aneurysms with thromboses in a healed stage. Arkin (44) speaks of the first or degenerative stage, the acute inflammatory stage, the granulation stage and the healed stage. Many authors have emphasized the fact that the process involves segments of vessels and does not damage the entire vessel, and that not all vessels are involved to the same degree simultaneously. Although arteriosclerosis may simulate the healed stage of periarteritis, the latter is: more focal, associated with a more marked inflammatory reaction, usually an eccentric lesion, and is associated with fragmentation of the internal elastic lamella, while in arteriosclerosis this membrane is intact and the alterations are internal to it (8, 11).

The frequency with which lesions are found in the various viscera are noted in Table 1. This table also summarizes the location of the lesions in the cases here reported. It will be noted that according to Arkin the muscles are involved in less than one third of the cases; if such is true a positive diagnosis from muscle biopsy would only be expected in one third of the cases. Palpable nodules occur in about 16 per cent of the cases and biopsy of these would raise the percentage of cases in which the diagnosis can be proved antemortem, though many cases will still remain unproved till necropsy. Kernohan and Woltman (45) report 5 cases with widespread nervous system involvement, and point out that infarction and degeneration of the peripheral nerves was found secondary to occlusion of the nutrient vessels. Neither of their 2 cases in which the brain was examined showed involvement of the arteries within the brain substance, although the branches of the internal carotid and to a less extent, the branches of the vertebral arteries were involved. Meningitis associated with and apparently caused by periarteritis has been reported (46). Periarteritis nodosa is said to be the chief cause of liver infarctions (47), and the occurrence of both hepatic and renal infarcts in the absence of endocarditis should make one suspect periarteritis (3). Some observers believe that the diagnosis is not justified in the absence of aneurysms (6, 11), and others emphasize the need for a high percentage of eosinophils in the perivascular infiltration (51). Typical lesions in various stages are illustrated from the cases herein reported in Figures 1 through 6. Death results from the impairment of the blood supply to vital areas—heart, kidneys, liver, etc.—occasioned by the multiple arterial occlusions.

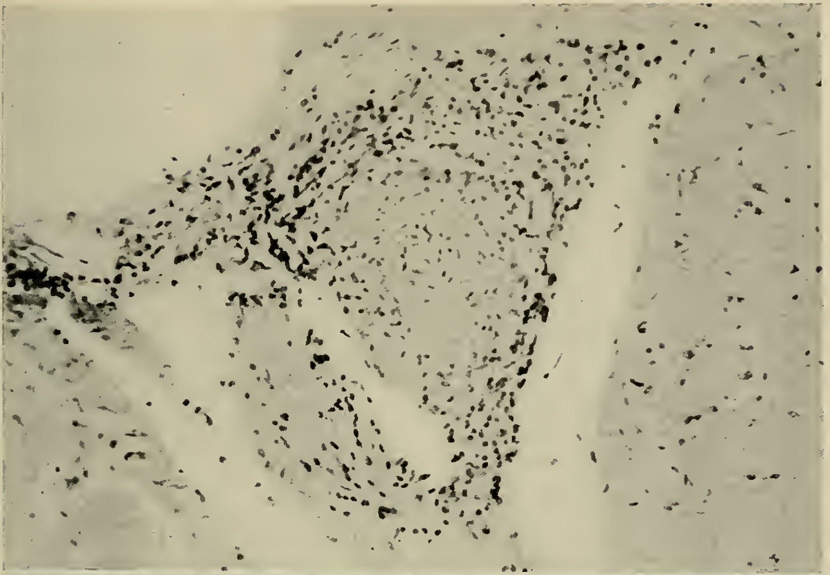
TABLE 1

	HARRIS & LYNCH (3)	ARKIN (44)	AUTHOR'S CASES						
			E. B.*	M. W.*	I. L.	F. H.*	W. G.	W. L.	N. L.
Kidney	87%	80%			+		+	+	+
Heart	70	70					+	+	+
Liver	71	65			+		+		
Gastro-intestinal Tract		50							
Spleen	31				+		+		
Muscle		30	+			+			+
Mesentric Vessels		30							
Pancreas		25			+		+	+	
Lungs	25							+	
Peripheral Nerves		20							+
Central Nervous System		8							
Skin				+			+		
Testis					+				

* Biopsies only.

SYMPTOMS

Kaussmaul and Maier entitled their paper, "Concerning a Curious Hitherto Not Described Disease of the Arteries (Periarteritis Nodosa) Which Is Accompanied by Bright's Disease and Rapidly Progressing Muscular Paralysis", thus describing two of the prominent features of this disease. Because of the widespread and variable involvement, the clinical aspects of the condition are usually bizarre and not readily explained by a single diagnosis. In general it is a cachectic disease associated with malaise, anorexia, and a low grade fever with additional symptoms and signs referable to the organs involved. Individual case reports recounting unusual symptom complexes produced by this disease are many and it would serve no useful purpose to list them here; however, the incidence of symptoms and signs as noted by Harris and Lynch (3) and as noted in the cases herein reported are noted in Table 2. In addition Jones noted uremia in 43 per cent, coma 36 per cent, icterus 28 per cent and convulsions in 7 per cent of 14 cases (47). Paresthesias, anesthesias, paralyses, atrophy, Jacksonian and generalized



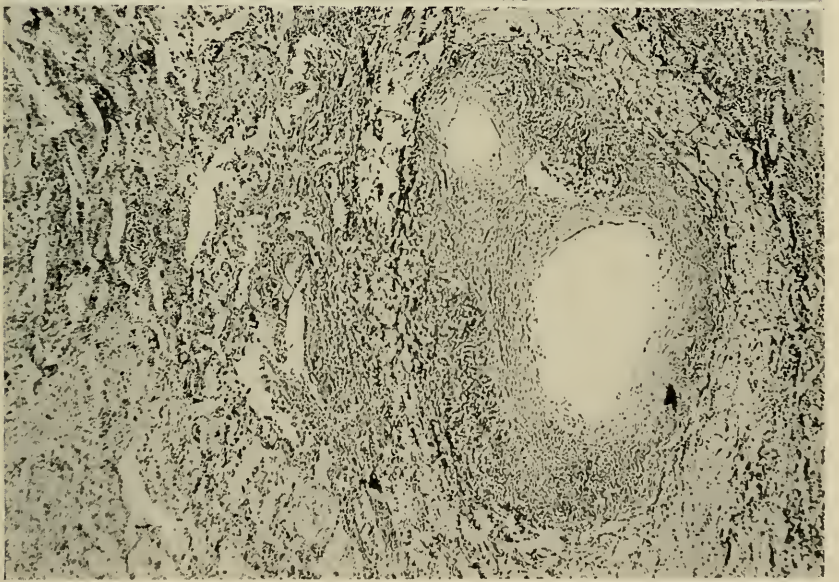
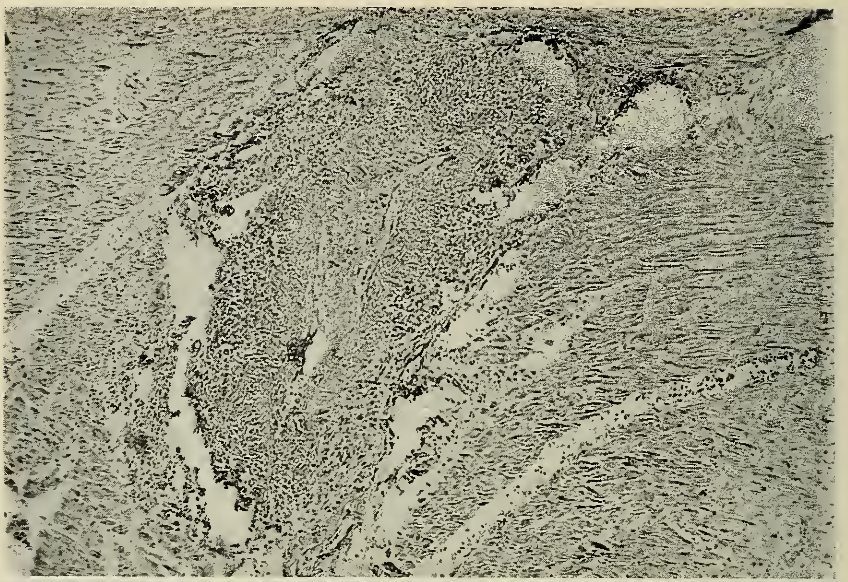


FIG. 1 (Top). A medium sized artery in calf muscle, showing an acute inflammatory infiltration of all coats of the wall. Inflammatory cells also infiltrate between the muscle bundles. Eosinophils predominate in the inflammatory reaction.

FIG. 2 (Bottom). An artery in a section of lung, showing a diffuse panarteritis.

convulsions and decerebrate rigidity have also been noted. The retina may show thrombosis of the central artery, edema, hemorrhage, albuminuric



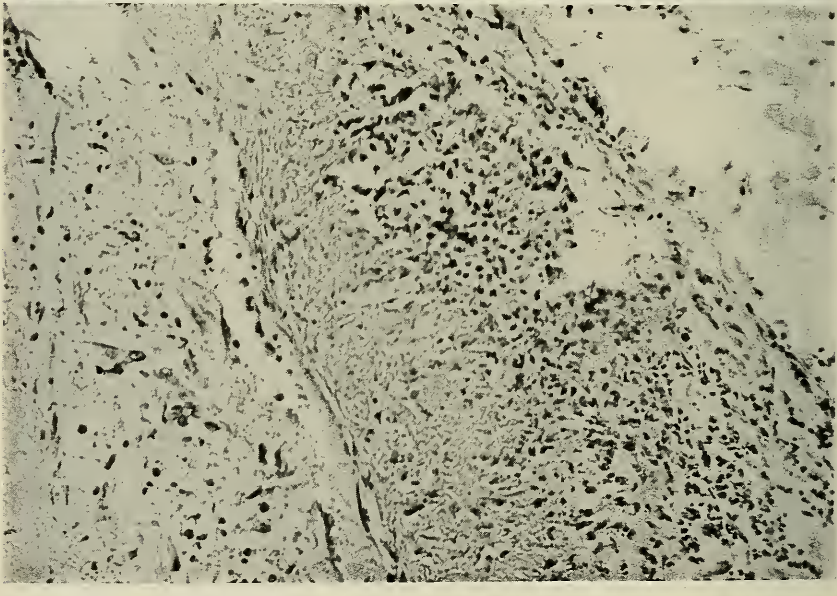
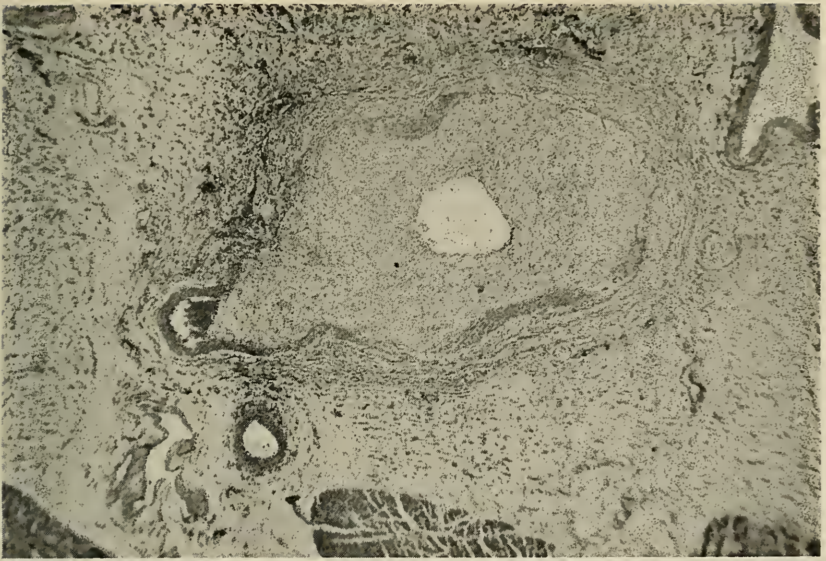


Fig. 3 (Top). A medium-sized artery in the myocardium, showing acute panarteritis.

Fig. 4 (Bottom). A segment of the wall of the vessel in Figure 3 seen under higher magnification to demonstrate the medial and adventitial infiltration.

retinitis, detachment and occasionally "cotton-wool patches" surrounding the macula, which if seen are thought to be pathognomic of the disease. In cases with nervous system involvement the spinal fluid may show a poly-



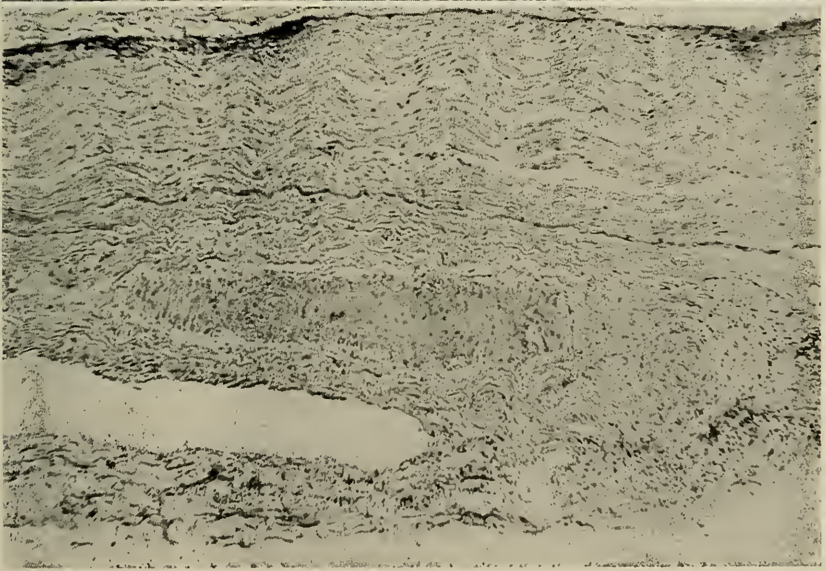


Fig. 5 (Top). A section of a coronary artery, showing a typical aneurysm in the healing stage.

Fig. 6 (Bottom). A section of nerve from the inside of the pelvis, showing a healing stage of periarteritis involving the nutrient artery.

morphonuclear pleocytosis with increased protein and pressure (45). Although eosinophilia as high as 84 per cent has been reported (4), the level varies widely in the course of the disease. Some believe that if counts are made frequently enough all cases will at some time show eosinophilia. In a review of 300 cases of periarteritis, 94 per cent of those associated with bronchial asthma showed an eosinophilia, and only 6 per cent of those with-

TABLE 2

	HARRIS & LYNCH, 101 CASES	E. B.	M. W.	I. L.	F. H.	W. G.	W. L.	N. L.
Age	36.9	36	45	38	65	71	72	31
Sex	3M/1F	M	M	M	F	M	M	M
Color		N	N	W	N	N	N	N
Duration of Symptoms		97 da	61	112	120	23	45	102
History:								
Allergic	15%			*	+			
Hypertensive					+			+
Drug Therapy		sulfa				dilantin	sulfa	sulfa
Symptoms:								
Fever	80%	+	+	+	+	+	+	+
Abdominal Pain	57			+				+
Edema	52		+	+	+			+
Neuritis	48	+	+		+		+	+
Weakness	41	+		+	+		+	+
Cough	36		+	+		+	+	+
Signs:								
Hypertension	46%			+	+			+
Weight loss	36			+		+	+	+
Anesthesias	31				+		+	
Atrophy	25				+		+	
Nodules	16	+	+					
Rash			+			+		+
Pneumonitis			+			+	+	+
Laboratory Findings:								
Leucocytosis	70%				+		+	+
Albuminuria	65		+	+	+		+	+
Hematuria	47		+	+			+	+
Eosinophilia	19	+			+		+	+
Uremia				+		+	+	+
Pneumonitis (on X-ray)			+				+	+
EKG changes				heart block				ant. infarct

* Family history of allergy.

out asthma showed this (4). Rackemann and Greene state that the triad of a history of severe, intractable asthma, pain and numbness in the extremities and an eosinophilia greater than 25 per cent should suggest periarteritis nodosa (6). There are many cases in the literature that bear out this association (31, 32, 52, 53) as does also one of the cases herein reported. Hypertension is a frequent finding, and it is at times difficult to differentiate periarteritis from malignant hypertension. Arkin (44) has attempted to correlate the clinical findings with the pathologic stages as noted in Table 3. In general this correlation is consistant with the clinical course of the fourth case herein reported. Skin lesions of many types have been reported in this disease (53). The urine may show erythrocytes, leukocytes, casts and albumin (22). Renal function tests may show renal impairment and the non-protein nitrogen of the blood may rise as is illustrated in the author's cases. Chest roentgenographs may show changes suggestive of bronchopneumonia, and electrocardiograms often show evidence of myocardial disease and less often of heart block or myocardial infarction.

TABLE 3

PATHOLOGIC	CLINICAL
1. Degenerative stage—hyaline change in the artery media	No symptoms or fever alone.
2. Acute inflammatory stage—cellular infiltration of the vessels.	Fever, chills, leucocytosis, eosinophilia, anaemia, symptoms of organ involvement; may die of renal insufficiency, hemorrhage, or cardiac insufficiency.
3. Granulation stage—proliferation of fibroblasts with replacement of cells and aneurysm formation.	Anaemia, emaciation, fever, falling leucocytosis, organ symptoms, may have acute exacerbations or death from hemorrhage.
4. Healed granulation stage—scar tissue produced by fibroblasts.	Afebrile, tachycardia, normal leucocyte count, symptoms of organ insufficiency (heart, kidneys, etc.)

DIAGNOSIS

Because of its protean manifestations this disease may simulate: glomerulonephritis, malignant nephrosclerosis, meningitis, miliary tuberculosis, thrombocytopenic purpura, peritonitis, septicemia, dysentery, polyneuritis, encephalitis, appendicitis, Schonlein's purpura, dermatomyositis, lupus erythematosus, trichiniasis (54), and other diseases. Periarteritis nodosa should be suspected when it is difficult to explain the symptoms under any single diagnosis. Confirmation of the diagnosis is made by biopsy of either muscle or a skin nodule. It is customary to do a biopsy of the biceps or gastrocnemius although a higher percentage of positives may be obtained from the pectoral muscles (55).

CASE REPORTS

E. B. (47401): A 36 year old negro male, laborer, was admitted on August 12, 1939, complaining of soreness of the muscles of 5 to 6 weeks duration. There was no history of allergy or hypertension, but 7 years previously he had had a penile sore. Six weeks prior to admission he developed stiffness of his arms on awakening which disappeared with exercise. Three weeks prior to admission he developed a restlessness of his legs and aching pains in the calves, thighs and triceps which were aggravated by standing immobile or by walking too fast. In recent weeks he had had several chilly sensations and severe night-sweats but no known fever. His temperature was 101.6; pulse 96; respiration 20; blood pressure 120 systolic over 40 diastolic. He was well nourished and had a generalized, shotty lymphadenopathy, carious teeth, accentuation of A-2, and moderate tenderness and weakness of the biceps, triceps, thigh and calf muscles without atrophy. There was normal sensation and all of the deep tendon reflexes were slightly hyperactive. Tiny, firm nodules were palpated along the radial artery. His urine was negative on repeated examinations. His blood showed: red blood count 4.0 million; hemoglobin 14.5 gms.; white blood count 8,000 with a slight neutrophilia and 1 per cent eosinophils. On repeated counts the maximum eosinophilia was 4 per cent (394/cmm). The sedimentation rate was 57 corrected to 42. His serologic tests for syphilis were positive on both blood and spinal fluid. Otherwise the spinal fluid showed a negative Pandy and Colloidal Mastic and 16 lymphocytes/cmm. Blood cultures, blood chemistries, serum agglutinations and stools were repeatedly negative. A Fishberg concentration test varied from 1.018 to 1.022. Roentgenographs of the chest and the right lower leg were negative. During his hospital stay he ran a hectic fever and a proportionate tachycardia. His blood pressure ranged from 110 systolic over 65 diastolic to 120 systolic over 40 diastolic. At first he received sodium salicylate and sulfanilamide (31 gms. in 7 days) without benefit; then these were discontinued and potassium iodide and bismuth subsalicylate were started as antiluetic therapy. A biopsy (S-6889) of the right triceps on August 29, 1949, showed periarteritis nodosa. By his twenty-fifth hospital day his symptoms began to subside and he became afebrile on his forty-eighth hospital day. He was discharged on his fifty-fifth hospital day and a follow up visit one month later revealed some aching pains in the right lower leg without muscle soreness and a blood pressure of 120 systolic over 80 diastolic.

M. W. (49417): A 45 year old negro male, stevedore, was admitted on August 30, 1939, complaining of chest pain of 4 weeks duration. He had no history of allergy or hypertension, but had been treated for lues. Four weeks prior to admission he noted a sharp, constant, substernal pain, aggravated by lying in the left lateral position, and a cough productive of mucoid sputum. Subsequently the pain moved to the left midclavicular line in the second interspace and radiated through to the scapula. He developed a fever of 101F, anorexia, drowsiness and increased fatiguability from the onset. His temperature was 100.2F; pulse 90; respiration 24; blood pressure 120 systolic over 65 diastolic. He was well nourished and not acutely ill, and showed dullness to flatness, restriction of excursion, suppressed breath sounds and a few crackling rales at the right base. The heart was moderately enlarged to the left, and a soft apical systolic murmur, and friction rub were heard. The patellar reflex was hypoactive on the right and the Achilles reflex was absent. Plantar-flexion resulted from testing the Babinski reflex. On admission the urine was negative but at one time during his stay it showed 1 to 2 red blood cells and 4 to 7 white blood cells. His blood showed: red blood count 3.5 million; hemoglobin 10.8 gm. white blood count 7,650 with no eosinophils on repeated examinations. The serologic tests for syphilis, blood cultures, non-protein nitrogen and agglutinations for brucella were negative. One stool was Guaiac positive. Repeated electrocardiograms showed evidence of non-specific myocardial disease. Sputa were negative for tubercle bacilli. Repeated chest roentgenographs showed the heart to be enlarged to both the left and right and a "non-tuberculous" infiltration into the right base. On symptomatic therapy his pain slowly abated and his temperature returned to normal on his twenty-seventh hospital day. However, throughout his hospital stay he ran a constant, slight tachycardia. On his thirty-seventh hospital day several, small, white-papules were noted over his right chest and glans penis. He was discharged on his forty-third hospital day still complaining of pressure sensation over the chest. After six days of sitting at home he noted a tight feeling in the calves of his legs, with some pain on walking and small, hard, tender subcutaneous nodules along his forearms, hands and lower legs. On October 21, 1939, he was readmitted with a temperature of 99.4F; pulse 96; respirations 22; blood pressure 110 systolic over 75 diastolic. The lung and cardiac signs were absent, and there were many pea-sized, hard, movable, slightly tender nodules beneath the skin of the forearms, metacarpophalangeal joints of both hands, the left lower leg and the left foot. His laboratory studies were negative except for a biopsy (S-7080) of a skin nodule on October 23, 1939 which showed an acute periarterial inflammation typical of periarteritis nodosa. Throughout this stay he remained afebrile and his pain disappeared. On his eighth hospital day he was discharged and a followup visit 3 weeks later revealed some stiffness in the right knee, many nodules still visible, and a blood pressure of 120 systolic over 80 diastolic.

I. L. (68545): A 38 year old white male, carpenter, was admitted on September 2, 1941, complaining of dyspnea of one day's duration. His father had asthma but the patient gave no history of allergy, hypertension or chronic infection. He had been in this hospital 3 months previously with weight loss, dull continuous epigastric pain, nausea, vomiting and constipation. At that time he was acutely ill with a dilated and fixed left pupil, nasopharyngeal inflammation and marked epigastric tenderness. His blood pressure was 115 systolic over 75 diastolic; the white blood count 15,400; hemoglobin 11.5 grams. The serologic tests for syphilis were positive on blood and spinal fluid; and he had a grossly bloody admission stool. A laparotomy was done during the fourth week which revealed a diffuse nodular induration of the pancreas and a node was removed from the omentum which pathologically showed no carcinoma. He convalesced uneventfully. A week prior to the last admission he developed epigastric discomfort, nausea, vomiting, dyspnea, palpitation, tachycardia, anorexia and irritability. He also noted a hard epigastric mass. His temperature was 98F; pulse 100; respiration 24; and blood pressure 180 systolic over 120 diastolic. He was poorly nourished, in moderate distress and nervous. The left pupil was enlarged and fixed to light; increased venous pulsations were noted in the neck; there were bilateral basilar rales in the lungs; a systolic murmur in the mitral area; accentuation of A-2; moderate sclerosis of the peripheral vessels and clubbing of the fingers. In the epigastrium there was a mass the size of a grapefruit; and reflexes were symmetrically diminished. The urine showed 3+ albumin, 8–10 white blood cells and 10–20 red blood cells. The blood showed: red blood count 4.1 million; hemoglobin 12.5 gms.; white blood count 10,600 with no eosinophils; serologic test for syphilis positive; non protein nitrogen 55 mg. per cent. The spinal fluid had a positive serologic test for syphilis with a negative Pandy and 1 lymphocyte/cmm. The stool was 4+ to Guaiac. Chest roentgenographs showed an enlarged heart and congestive changes at the lung bases. An electrocardiogram showed myocardial disease with a second degree heart block; his venous pressure was 360 mm. of water. He was started on digitalis and on his second hospital day he was transferred to the surgical service where on laparotomy no additional findings were noted. For 3 days postoperatively he did well, then developed abdominal pain and a diffuse, macular rash over the neck and chest, and edema of the face. His non-protein nitrogen rose (200 mg. per cent on September 14) and his temperature reached 105F; he became irrational and his spinal fluid showed xanthochromia and 300 red blood cells per cmm. He was noted to have a purpura over the chest, nuchal rigidity, left papilledema and three small retinal hemorrhages. The tourniquet test was positive, and repeated blood cultures were negative. At this time he was thought to have malignant hypertension. Two days later a loud pericardial friction rub developed with a gallop rhythm. On digitalis and hypertonic glucose therapy he improved somewhat, his non protein nitrogen dropping to 100 mg. per cent. On his sixteenth hospital day his abdominal wound dehisced necessitating secondary closure. Throughout his hospital stay he ran an intermittent fever and a continuous tachycardia; his blood pressure ranged from 162 systolic over 80 diastolic to 200 systolic over 110 diastolic. He expired on his twenty-second hospital day.

Autopsy #10221: The body was emaciated; no rashes were noted. The coils of intestine were adherent by a thin layer of exudate and were blackish-green in color. In the pelvis and along the ascending colon was a thicker, caseous yellow exudate. The pericardial cavity contained 100 cc. of fibrinous exudate and the layers of the pericardium were adherent by friable adhesions. There were multiple small hemorrhagic areas beneath the epicardium. Along the smaller coronary vessels were several opaque, pearly, firm nodules. On section similar pearly white thickenings were noted along the smaller branches of the hepatic artery. In many of these vessels thrombus formation was evident. Similar thickening was noted in the vessels of the pancreas, the wall of the duodenum, and particularly along the mesenteric attachment of the intestine. The kidneys were very scarred and on section multiple areas of cortical infarction were seen. Focal thickenings similar to those seen elsewhere were noted in the arcuate vessels. Multiple hemorrhagic areas were seen in the bladder. Microscopic sections showed a healed arteritis in the pancreas, liver, kidney, spleen and testis. Although gross nodules were noted at autopsy along the smaller coronary vessels, the sections failed to show these. The process was best seen in the pancreas where a marked fibrous, eccentric thickening of the intima was present, reducing the lumen to a fraction of its former size. The internal elastic lamella was disrupted at several points and the media thinned and scarred. The adventitia was greatly thickened by fibrous tissue which was infiltrated by a few mononuclear cells. Several of the vessels showed small aneurysms at points along their walls. The liver showed similar involvement with one vessel containing a partially organized thrombus. The kidneys showed multiple, cortical infarctions in various stages of healing.

F. H. (101592): A 65 year old negro female, house servant, was admitted on May 28, 1946, complaining of weakness and numbness of 2 months duration of the hands, feet, knees and ankles. Her mother had had asthma; a brother had heart trouble and her only son had diabetes and a coronary thrombosis. Between 1933 and 1944 she was seen repeatedly in the allergy clinic of the Johns Hopkins Hospital for chronic pansinusitis, allergic rhinitis and asthma. In 1938 she was first noted to have paroxysmal dyspnea and at that time she gave a positive skin reaction to 4 Aspergilli, house dust and ragweed. Desensitization to dust and ragweed was then carried out. In 1940 she was shown sensitive to 6 bacteria and desensitized with mixed vaccines. In all she received seventy-four desensitizing injections varying from 0.1 cc. to 1.0 cc. per dose. In 1933 she was first noted as hypertensive. Several blood pressures such as 152 systolic over 100 diastolic were recorded subsequently reaching a maximum of 210 systolic over 115 diastolic in 1941. Urinalysis was repeatedly negative until 1941 when a trace of albumin was noted and which increased to 1+. About 3 and ½ months prior to admission she developed fatigue, malaise, nausea and coldness of the extremities. Twelve hours later she suddenly noted generalized weakness, paralysis, and flexion contracture of the right hand. The following day she could walk fairly well and had some return of function in the right hand but the numbness continued. For 2 weeks she got along fairly well then her knees became weak though she could move her right hand and fingers fairly well. A week prior to admission she developed severe stiffness and pain in the knees, swelling of the soles of the feet, numbness and tingling of the feet and involuntary muscle contractions in the legs. Massaging of the muscles produced severe aching pain. At the time of admission she could walk slowly with aid but could not move her toes, while her forearms and legs ached continuously and felt cold and hard. Her temperature was 100F; pulse 96; respiration 18; and blood pressure 150 systolic over 78 diastolic. She appeared chronically ill and edema of the palms and soles was noted. A circular red spot about 2 mm. in diameter in the right macula, and paleness of the discs bilaterally were noted. There was a small hard, non-tender, freely movable mass in the left breast and a soft systolic murmur at the cardiac apex. The liver was palpable 4 cm. below the costal margin in the right mid-clavicular line. There was marked weakness and wasting (chiefly the interossei, thenar and hypothenar eminences of the right hand and the muscles of the left lower leg), coldness and pallor of the extremities, a right wrist drop and a left foot drop. There was loss of all modalities of sensation in both feet and loss of pin prick in the right hand. Only the biceps and abdominal reflexes were obtainable. The Babinski test gave no reaction. On admission the urine was negative and repeated urinalyses showed a trace of albumin and a consistently low specific gravity. The maximum concentration on the Fishberg test was 1.013. The phenolsulphonphthalein test revealed 20 per cent excretion in the first 15 min. with 48 per cent at the end of 2 hours. The red blood count was 3.75 million; white blood count was 14,050 with a 49 per cent eosinophilia; hemoglobin 10 gms.; the sedimentation rate was 51 corrected to 41 mm.; and serologic tests for syphilis were negative. Throughout her hospital stay frequent blood counts were done showing a slow increase in red blood cells and hemoglobin, a constant eosinophilia ranging from 3 to 55 per cent, and total leukocyte counts varying from 6,400 to 15,150. Blood chemistries, stools, spinal fluid; chest, skull and long bone roentgenographs, basal metabolic rate and a trichinella skin test were all negative. An electrocardiogram showed nonspecific myocardial disease. A calf muscle biopsy (S 11722) on June 5, 1946, showed acute lesions of periarteritis nodosa. She was at first tried on thiamin chloride without relief, then given ½ grain of papaverine twice daily with moderate relief, and later benadryl up to 200 mgm. daily without relief. For the first 2 months she ran an intermittent, low grade fever and during her entire hospital stay she had a sustained tachycardia. She had several mild asthmatic attacks and one episode of bronchopneumonia. Slowly she gained weight and strength and function returned in her legs and right hand. She was discharged on December 23, 1946, to continue convalescence at home. A follow-up 2 years since admission shows only a slight weakness in the right wrist and left ankle, some aching in the calves and a pulse of 84 with a blood pressure 180 systolic over 120 diastolic. Her white blood count was 5,650 with 2 per cent eosinophils. Biopsy S 11722: The muscle bundles, fibers and nuclei were all intact with no evidence of degeneration. Two medium-sized arteries were seen. The first of these showed edema and hyaline degeneration of the intima and media (Figure 1). The adventitia is markedly thickened by fibrous tissue. All coats of the vessel were infiltrated by inflammatory cells which were chiefly neutrophils. About the periphery of the adventitia was a wide cuff of inflammatory cells which were 80 per cent eosinophils. The second artery appeared to be in a later stage as evidenced by fewer inflammatory cells, more prominent fibrosis and endothelial lined channels making their way through the fibrous tissue. The eosinophil was the predominant cell of the reaction here also. Radiating away from each of these vessels the inflammatory cells appeared to be infiltrating between the muscle bundles.

W. G. (100587): A 71 year old negro male, unemployed, was brought to the hospital on April 13, 1946 by friends. He was drowsy and complained of a sore mouth. There was no history of allergy or hypertension. For the first time in his life, in November 1945, he had three generalized convulsions each lasting several minutes without loss of consciousness. He was placed on 0.1 gram of Dilantin three times a day immediately, which he continued to take until he was admitted to the hospital. In January 1946, he passed several black stools and vomited small amounts of blood but these cleared on aluminum hydroxide gel therapy. About 2 weeks prior to admission he developed a maculopapular rash, scleral injection and "spots" on the oral mucosa. He was thought to have measles, as an epidemic was existent at that time. One week prior to admission he noted ulceration of the gums which spread to involve the entire mouth despite oral penicillin therapy. He also had a severe, non-productive cough. Because of the mouth lesions he was unable to eat or drink satisfactorily. His temperature was 99.4; pulse 76; respiration 28; blood pressure 80 systolic over 40 diastolic. He was emaciated, dehydrated and drowsy. The skin was desquamating over the entire body—particularly on the palms and soles, and there were shotty, discrete nodes in the left posterior cervical chain and both inguinal regions. The eyelids were matted with purulent exudate, the sclerae and conjunctivae injected, and the fundi showed a grade I arteriosclerotic retinopathy. The nasal mucosa was encrusted and the entire mouth involved in a severe ulcerative stomatitis with thick pus over the mucous membrane. The chest was emphysematous and there was a small area of increased breath sounds over the left chest anteriorly with inspiratory and expiratory ronchi. The prostate was enlarged and there were large external hemorrhoids. The urine was negative; the blood showed: red blood count 3.2 million; hemoglobin 9.5 gms.; white blood count 6,100 with 75 per cent neutrophils and no eosinophils; the sedimentation rate was 50 corrected to 9 mm.; serologic test for syphilis negative. The non-protein nitrogen was 252 mg. per cent on April 16, 1946 and 89 on April 18, 1946. The stool was negative. Roentgenographs of the chest and pelvis were negative. On parenteral therapy with vitamin supplements and local mouth care he became less drowsy and his non protein nitrogen dropped remarkably; however, he remained incontinent. He ran an intermittent fever reaching 101.6F, and a constant tachycardia. Soon after admission his skin began to exfoliate and this progressed up to his death on the ninth hospital day.

Autopsy #11914: The body showed a generalized desquamation of the skin; the heart was not abnormal beyond non-specific thickening of the valves; the lungs showed numerous emphysematous blebs; the liver, spleen, gall bladder and gastrointestinal tract were not abnormal except for numerous colonic diverticula; the kidneys were granular and the right one showed a large, old scar. Microscopic: On section an acute panarteritis was found in the liver, spleen and kidneys. In the liver the periportal areas were heavily infiltrated with polymorphonuclear and mononuclear cells among which eosinophils were prominent. The walls of the small arteries showed edematous intima, disruption of the internal elastic lamella, edema and hyalin change of the media, and edema with a marked infiltration of the adventitia by polymorphonuclear, eosinophilic and mononuclear leucocytes. In the spleen there were similar changes with less edema and infiltration and relatively more fibrous tissue. The process seemed most acute in the kidneys where the lumen was almost occluded in many arteries by marked edema and hyalinization with infiltration of the intima by polymorphonuclear cells. The media was eccentrically thickened in some areas and thinned in others, and was edematous, hyalinized and heavily infiltrated by neutrophils and eosinophils. The adventitia showed extensive infiltration and periarterial, acute inflammatory reaction with eosinophils predominant. There were numerous foci of inflammatory cells in the renal cortex—these were more prominent in the scarred area.

W. L. (110624): A 72 year old negro male was admitted on May 13, 1947, complaining of vague pain and tenderness in the arms and legs. He was known to be serologically positive for syphilis in 1921; to have had intermittent gonococcal arthritis, from 1913 to 1921; and to have had exertional dyspnea and ankle edema for the past 2 years. There was no history of allergy or hypertension. He was once given tincture of digitalis but he stopped this voluntarily in 1946. Five weeks prior to admission he developed vague muscle pains. Three weeks before admission his muscle pains, weakness and tenderness caused him to take to bed. Eight days before admission he woke with a sharp, non-radiating, moderately intense pain in the right lower chest and flank that was aggravated by coughing. His physician first gave him brown mixture which was ineffectual, then prescribed sulfadiazine 4 grams daily for 3 days then 2 grams daily for 3 days. The patient failed to get better and was referred to this hospital. His temperature was 101F; pulse 86; respiration 20; blood pressure 122 systolic over 70 diastolic. He was an undernourished, dehydrated negro male with a clouded sensorium. There was a generalized shotty lymphadenopathy. The left pupil was larger than the right and the fundi showed arteriolar streaking and A-V nicking.

The lungs were emphysematous; there was a slight impairment to percussion, and breath sounds were suppressed at the right base. The heart was not abnormal and there was moderate peripheral arteriosclerosis. There was moderate tenderness of the abdominal muscles, marked wasting and weakness of the quadriceps, anterolateral muscles and calf muscles on the right, and a weakness of the left quadriceps. The triceps and patellar reflexes were absent bilaterally and the ankle jerks weak. There was decreased response to pin prick over the areas of the third to the fifth lumbar roots on the left and the fourth to the fifth on the right. The left leg was larger than the right and showed a positive Homan's sign. The urine was of low (1.010) specific gravity and had a 1 plus albumin with 8 to 12 white blood cells and 4 to 6 red blood cells per high power field. The blood showed red blood count 4.82 million; white blood count 9,500; hemoglobin 11.2 gms. and a differential count with 1 per cent eosinophils. The white blood count rose to 24,800 with 3 per cent eosinophils (744/cmm.) on the eighth hospital day. The serologic tests for syphilis were negative. Blood chemistries on admission were within normal limits. The stool and spinal fluid were negative. A chest roentgenograph on admission showed a pneumonitis in the right hilus and a suspected pneumonitis in the left base. On penicillin 40,000 units every three hours and forced fluids he became less drowsy and his temperature dropped by crisis to normal on his fifth hospital day. However, his abdomen became more tender and on his eighth hospital day his lungs began to fill with rales, and he became moribund. On his tenth hospital day his non protein nitrogen had risen to 225 and he expired. At no time was his blood pressure elevated.

Autopsy #12406: The body was somewhat emaciated and the abdominal cavity contained 1000 cc. of serous fluid. The lungs on section showed a mottled grayish-red appearance. The coronary vessels, valves and myocardium did not appear abnormal. The liver weighed 1900 gms. and on cut surface showed multiple, tiny, white, nodular areas. The spleen weighed 300 gms. and in its center contained a 6 cm. oval tumor. The kidneys weighed 300 and 400 gms. and on section both kidneys showed replacement of the entire cortex by an irregular, firm, white tissue, necrotic in some areas, and separated from the medulla by a hyperemic area. Sections of the lung, heart, kidneys, gallbladder, prostate and testis showed an acute panarteritis. In the lung (Figure 2) several medium-sized arteries showed thickened edematous intima infiltrated by polymorphonuclear cells. The internal elastic lamella was disrupted and the media was edematous and infiltrated by polymorphonuclears—in some areas hyaline degeneration was present. The adventitia was heavily infiltrated by neutrophils with a few eosinophils present. Almost no fibrosis of the vessels was seen, indicating the acuteness of the process. In the kidney the medium-sized arteries all showed a similar panarteritis and there were large areas of coagulation necrosis involving the entire cortex. Sections of the myocardium showed a similar process (Figures 3 and 4) with marked edema and infiltration of all coats of the vessel wall.

N. L. (114235): A 31 year old negro male, tomato picker, was admitted on October 2, 1947, complaining of cramping abdominal pain of 3 weeks duration. He had had gonorrhea three times and a blood test was positive for lues in 1946. At this time he received two shots and no further treatment. In 1943 he had been rejected by the draft because of hypertension; there was no history of allergy. About 8 weeks prior to admission he noted the onset of generalized malaise, muscle soreness and a fever which slowly decreased over a period of 3 to 4 weeks but which never completely disappeared. About 4 weeks prior to admission he noted an inconstant, dull, non-radiating, aching pain in both lumbar and flank regions. Three weeks prior to admission he noted anorexia, and the onset of a dull, crampy, non-radiating, constant epigastric pain not related to eating and relieved somewhat by flexion of the thighs or the abdomen. Because of this pain he ceased work, and a short while later he noted fever again, constipation and dark urine. Six days before admission he was seen in the accident room of this hospital where the diagnosis of pyelitis was made and he was sent home on sulfadiazine 1 gram three times a day for 5 days. His urine at this time showed 10–21 white blood cells per high power field. At this time he thought he had lost over 25 pounds in a month and a half. At the end of 5 days he was unimproved and was admitted to the medical service. His temperature was 102F; pulse 72; respiration 20; blood pressure 150 systolic over 105 diastolic. He was acutely ill and anxious. There was evidence of weight loss and a generalized shotty glandular enlargement. The skin was clear and the head showed narrowed and tortuous retinal arteries and chronically inflamed tonsils. There was muscle soreness at the base of the skull. The heart and lungs were within normal limits and the abdomen showed generalized tenderness in the epigastrium and over the liver with some costovertebral angle tenderness bilaterally. Both calves were tender and the neurologic examination was negative. The urine findings varied from 1.014 to 1.020 in specific gravity and showed a few white blood cells and red blood cells at various times. The phenolsulfonthalein test showed 20 per cent excretion in 15 minutes and 50 per cent in 2 hours. His blood showed: red blood count 3.7 million; hemoglobin 12.5 gms.; white blood count 13,000 with a shift to the left. The sedimentation rate was 42 corrected to 36 mm. with a positive serologic test for syphilis and a titer of 2. During his stay he ran a varying leucocytosis up to 14,600 with at one time 4 per cent eosinophils (584/cmm.). The non-protein nitrogen which was 25 on addmission gradually reached 113 on his forty-third hospital day. Blood cultures, stools, liver function tests, gastric analysis, spinal fluid and repeated sputum examinations were all within normal limits. The electrocardiogram on admission was normal but subsequent ones showed changes suggestive of anterior myocardial infarction and diffuse myocardial damage. Chest roentgenographs on admission were normal. The tuberculin test was positive in the first strength. Two gastrocnemius muscle biopsies showed only chronic myositis. On symptomatic therapy and antispasmodics his course was progressively downhill with continuous abdominal pain, restlessness, pyrexia and weight loss. He became dyspneic, and roentgenograms indicated a progressive pneumonitis starting in the hilar areas and spreading peripherally. His electrocardiograph showed progressive myocardial damage. On his fourteenth hospital day a right foot drop was first noted and 6 days later a left foot drop. On his twenty-third hospital day his liver was found to be down 3 f.b. and penicillin was started with a decrease in his pyrexia. Papaverine, 4 grains daily and rutin 300 mgm. daily were ineffectual in alleviating his symptoms and on his forty-third hospital day a dark blue, non-blanching, macular rash appeared over his back, chest and legs. His abdominal pain abated only to recur on his forty-fifth hospital day, and he passed a bloody stool. The following day he was more drowsy and expired.

Autopsy #12624: The skin showed a macular rash and evidence of weight loss. The lungs showed three areas, dark red in appearance, which suggested recent infarction. The heart was hypertrophied and along the branches of the coronary vessels numerous small pale, gray-white, hard nodules were seen. There was no evidence of infarction. The kidneys were swollen and on section showed multiple, scarred, white areas extending the entire thickness of the cortex. The mucosa of the esophagus, stomach and intestine was hyperemic and in the latter there was evidence of extensive hemorrhage into the wall. Microscopic sections showed changes compatible with a healing periarteritis in the heart, kidneys, pancreas, adrenals, peripheral nerves, and the mesenteric arteries just at their junction with the gut. In a section of muscle there was some disruption of the fibers with round cell infiltration. The lung showed several venous thromboses and an area of infarction but no definite periarteritis. In all instances the slides indicated a relatively healed stage of the disease. The intestine showed a hemorrhage chiefly subperitoneal but also into the mucosa. The heart (Figure 5) showed the most acute process with some cloudy swelling of the muscle bundles and multiple classical aneurysms on the coronary vessels. There was striking fibrous intimal thickening with disruption of the internal elastic lamella. The media was thinned markedly in some areas with an attempt at fibrous strengthening. The adventitia was thickened by fibrous tissue and contained a sparse infiltrate of mononuclear cells. Many of these vessels showed outpouching of the wall on one side with the formation of a small aneurysm. A similar process was present in the kidney with multiple areas of infarction in a more or less healed state. A peripheral nerve (Figure 6) taken from the inside of the pelvis showed a similar process about the nutrient arteries and minimal evidence of degeneration of the nerve bundles. In every instance the striking thing was the predominance of connective tissue scarring and thickening of the vessel wall with the perivascular infiltrate being limited chiefly to the adventitia and being for the most part mononuclear cells.

DISCUSSION OF CASES

In the 7 cases seen at this hospital the average age was 51.1 years. Six of the 7 were males and 6 were negros. Only 1 had an allergic history and 1 had a family history of allergy. Two had a history of hypertension preceeding the onset of the periarteritis and 3 had hypertension during the course of the disease. Three had received sulfonamides but in all instances the symptoms antedated the sulfonamide therapy. Thus it is difficult to assess the role of these drugs in the causation of these cases. Sensitivity to sulfa drug may have augmented the process; however, in only one case was there a skin rash suggesting definite sulfa sensitivity. In 1 case dilantin sensitivity was evidenced by stomatitis and generalized exofoliative dermatitis with typical lesions of acute periarteritis nodosa found on autopsy. One of these cases (FH) had a 10 year history of nasal allergy and intrinsic asthma and exemplifies the triad of Rackemann and Greene (6). It is of interest that 5 of the 7 gave a past history of lues while 3 of these 5 had a positive serologic test for syphilis on admission. In 2 of the cases no history of allergy or exposure to drugs known to cause sensitivity reactions could be obtained. The incidence of the various symptoms and signs and laboratory findings is summarized in Table 2, suffice it here to call attention to the fever in all cases, the high incidence of neuritis, and the 57 per cent incidence of eosinophilia in the author's cases. Only 2 of the 7 cases showed nodules clinically. The 4 cases that died all had uremia terminally and 3 of these 4 showed hematuria and albuminuria. Four of the 7 showed physical or roentgen evidence suggestive of pneumonitis. Electrocardiograms done in 4 of the cases showed non-specific myocardial disease in 2, heart block in 1 and evidence suggestive of anterior myocardial infarction in 1. In 3 cases muscle biopsies (1 triceps; 2 calf muscle) were done and 2 of them showed typical lesions while the third showed only non-specific myositis. The duration of the disease in this series varied from 23 to 120 days with an average duration of 80 days. Four of the cases terminated in death within the hospital while of the 3 living on discharge adequate follow-up has been possible in only 1. This case (FH) is well and essentially asymptomatic now 2 years since admission to the hospital. She walks with a very slight left foot drop and the neurologic examination showed a minimal weakness of the extensors of the right wrist and the flexors of the left foot. All of the 4 that died were autopsied and the incidence of organ involvement is summarized in Table 1. In these cases there is a striking correlation between the stage of the histologic lesion and the duration of the disease—the longer the process the more prominent the fibrous tissue and mononuclear reaction. In the 2 cases of short duration only acute inflammatory lesions were found. All 4 of the fatal cases had renal involvement clinically dying in uremia. In every instance cortical infarctions were present, and they were multiple in 3 of the 4. The heart was involved in 3 of the 4 fatal cases, and though 1 of these showed heart block and 1 changes suggestive of anterior infarction on electrocardiograms, no frank infarction was found. The brain and meninges were examined in 3 instances (WG, WL, NF) and the spinal cord in 1 (WG) but no lesions were found. In only 1 instance was a peripheral nerve taken at autopsy and this showed characteristic lesions of the nutrient arteries. Skeletal muscle was examined in 3 cases and showed typical lesions in 2.

SUMMARY

A partial review of the English literature has been made with particular reference to the present etiologic theories. Seven proved cases of periarteritis nodosa have been reviewed and discussed. Undoubtedly as the disease is better known and more often suspected its incidence will increase and the prognosis will become less ominous. It should be suspected whenever the clinical findings are not readily explained by a single diagnosis. Fever of undetermined origin, abdominal pain and peripheral neuritis are among the more common initial symptoms. The etiology is as yet unproven and therapy is symptomatic.

The author wishes to express his appreciation to Dr. G. C. Warner for help in preparing this paper and to Drs. C. R. Hoffman and J. J. VanWyke for permission to include their cases.

BIBLIOGRAPHY

1. Landis, E. M.: In A Textbook of Medicine, by R. L. Cecil, 5th ed., Philadelphia, Pa. W. B. Saunders Co., 1941, p. 1278.
2. Kussmaul, A. and Maier, R.: Ueber eine bisher nicht beschriebene eigenthumliche Arterienerkrankung (Periarteriitis nodosa), die mit Morbus Brightii und rapid fortschreitender allgemeiner Muskellähmung einhergeht, Deutsche Arch. f. Klin. Med. **1:** 484, 1866.
3. Harris, A. W., Lynch, G. W. and O'Hare, J. P.: Periarteritis Nodosa, Arch. Int. Med. **63:** 1163–1182, 1939.
4. Wilson, K. S. and Alexander, H. L.: The Relation of Periarteritis Nodosa To Bronchial Asthma and Other Forms of Human Hypersensitiveness, J. Lab. & Clin. Med. **30:** 195–203, 1945.
5. Wilmer, H. A.: Periarteritis Nodosa in the First Month of Life, Bull. Johns Hopkins Hosp. **77:** 275–286, 1945.
6. Rackemann, F. M. and Greene, J. E.: Periarteritis Nodosa and Asthma, Tr. A. Am. Physicians **54:** 112–118, 1939.
7. Osler, William: The Principles and Practice of Medicine, 3rd ed., D. Appleton and Co., 1901, p. 788.
8. Ophüls, W.: Periarteritis Acuta Nodosa, Arch. Int. Med. **32:** 870–898, 1923.
9. Harris, W. H. and Friedrichs, A. V.: The Experimental Production of Periarteritis Nodosa In the Rabbit With a Consideration of the Specific Causal Excitant, J. Exper. Med. **36:** 219–229, 1922.
10. Harris, W. H.: The Etiology and Pathology of Periarteritis Nodosa, South. M. J. **19:** 426–430, 1926.
11. Lamb, A. R.: Periarteritis Nodosa—A Clinical and Pathological Review of the Disease, Arch. Int. Med. **14:** 481–516, 1914.
12. Smith, C. C., Zeek, P. M., and McGuire, J.: Periarteritis Nodosa In Experimental Hypertensive Rats and Dogs, Am. J. Path. **20:** 721–735, 1944.
13. Collins, D. H. and Goldie, W.: Observations on Polyarthritis and on Experimental Erysipelothrix Infection of Swine, J. Path. & Bact. **50:** 323–354, 1940.
14. Friedberg, C. K. and Gross, L.: Periarteritis Nodosa (Necrotizing Arteritis) Associated with Rheumatic Heart Disease, Arch. Int. Med. **54:** 170–198, 1934.
15. Rich, A. R. and Gregory, J. E.: Periarteritis Nodosa and Hypersensitivity, Bull. Johns Hopkins Hosp. **72:** 65–88, 1943.
16. Rich, A. R. and Gregory, J. E.: Experimental Evidence That Lesions with the Basic Characteristics of Rheumatic Carditis Can Result From Anaphylactic Hypersensitivity, Bull. Johns Hopkins Hosp. **73:** 239–264, 1943.
17. Selye, H. and Pentz, E. I.: Pathogenetical Correlations Between Periarteritis Nodosa, Renal Hypertension and Rheumatic Lesions, Canad. M. A. J. **49:** 264–272, 1943.

18. Selye, H., Sylvester, O., Hall, C. E. and LeBond, C. P.: Hormonal Production of Arthritis, J. A. M. A. **124:** 201–207, 1944.
19. Selye, Hans: The General Adaptation Syndrome And Diseases of Adaptation, J. Clin. Endocrinol. **6:** 117–230, 1946.
20. Banks, B. M.: Is There a Common Denominator in Scleroderma, Dermatomyositis, Disseminated Lupus Erythematosis, the Libman-Sacks Syndrome and Polyarteritis Nodosa, New England. J. Med. **225:** 433–444, 1941.
21. Klemperer, P., Pollack, A. D. and Baehr, G.: Diffuse Collagen Disease, J. A. M. A. **119:** 331–332, 1943.
22. Krupp, M. A.: Urinary Sediment in Visceral Angitis (Periarteritis Nodosa, Lupus Erythematosis, Libman-Sacks Disease), Arch. Int. Med. **71:** 54–61, 1943.
23. Rich, A. R.: The Role of Hypersensitivity In Periarteritis Nodosa. As Indicated by Seven Cases Developing During Serum Sickness and Sulfonamide Therapy, Bull. Johns Hopkins Hosp. **71:** 123–140, 1942.
24. Cooke, R. A.: Allergy in Theory and Practice, Philadelphia, Pa. W. B. Saunders Co. 1947, pp. 76–77.
25. Clark, E. and Kaplan, B. I.: Endocardial, Arterial and Other Mesenchymal Alterations Associated With Serum Disease In Man, Arch. Path. **24:** 458–475, 1937.
26. Eason, J. and Carpenter, G.: Treatment of Acute Rheumatic Polyarthritis With Concentrated Antiscarlatinal Serum, Quart. J. Med. **30:** 93–117, 1937.
27. Rich, A. R.: Additional Evidence of the Role of Hypersensitivity In the Etiology of Periarteritis Nodosa. Another Case Associated With a Sulfonamide Reaction, Bull. Johns Hopkins Hosp. **71:** 375–379, 1942.
28. Hoffman, C. R.: To be Published.
29. Rich, A. R.: Hypersensitivity to Iodine As a Cause of Periarteritis Nodosa, Bull. Johns Hopkins Hosp. **77:** 43–48, 1945.
30. Van Wyke, J. J. and Hoffman, C. R.: Periarteritis Nodosa. A Case of Fatal Exfoliative Dermatitis Resulting from "Dilantin Sodium" Sensitization, Arch. Int. Med. **81:** 605–611, 1948.
31. Kline, B. S. and Young, A. M.: Cases of Reversible and Irreversible Allergic Inflammation, J. Allergy **6:** 258–272, 1934.
32. Cohen, M. B., Kline, B. S. and Young, A. M.: The Clinical Diagnosis of Periarteritis Nodosa, J. A. M. A. **107:** 1555–1558, 1936.
33. Fox, R. A. and Jones, L. R.: Vascular Pathology in Rabbits Following the Administration of Foreign Protein, Proc. Soc. Exper. Biol. & Med. **55:** 294–295, 1944.
34. Smith, C. C. and Zeek, P. M.: Studies on Periarteritis Nodosa. II. The Role of Various Factors in the Etiology of Periarteritis Nodosa in Experimental Animals, A. J. Path. **23:** 147–157, 1947.
35. Wilson, C. and Pickering, G. W.: Acute Arterial Lesions In Rabbits With Experimental Renal Hypertension, Clin. Sc. **3:** 343–355, 1937.
36. Child, C. G.: Observations On the Pathological Changes Following Experimental Hypertension Produced by Constriction of the Renal Artery, J. Exper. Med. **67:** 521–528, 1938.
37. Wilson, C. and Byrom, F. B.: The Vicious Circle In Chronic Bright's Disease. Experimental Evidence From the Hypertensive Rat, Quart. J. Med. **10:** 65–93, 1941.
38. Friedman, B., Jarman, J., and Klemperer, P.: Sustained Hypertension Following Experimental Unilateral Renal Injuries. Effects of Nephrectomy, Am. J. M. Sc. **202:** 20–29, 1941.
39. Cromartie, W. J.: Arteritis in Rats With Experimental Renal Hypertension, Am. J. M. Sc. **206:** 66–75, 1943.

40. Wilens, S. L. and Sproul, E. E.: Spontaneous Cardiovascular Disease in the Rat. I Lesions of the Heart, Am. J. Path. **14:** 177–199, 1938.
41. Wilens, S. L. and Sproul, E. E.: Spontaneous Cardiovascular Disease in the Rat. II Lesions of the Vascular System, Am. J. Path. **14:** 201–216, 1938.
42. Ham, A. W.: Coronary and Aortic Sclerosis, Periarteritis Nodosa, Chronic Nephritis and Hypertension as Sequela to Single Experimentally Produced Widespread Calcium Precipitation in the Rat, Arch. Path. **29:** 731, 1940.
43. Manges, M. and Baehr, G.: Periarteritis Nodosa, Am. J. M. Sc. **162:** 162–182, 1921.
44. Arkin, A.: A Clinical and Pathological Study of Periarteritis Nodosa, Am. J. Path. **6:** 401–426, 1930.
45. Kernohan, J. W. and Woltman, H. W.: Periarteritis Nodosa With Specific Reference to the Central Nervous System, Arch. Neurol & Psychiat. **39:** 655–686, 1938.
46. Krahulik, L., Rosenthal, M. and Laughlin, E. H.: Periarteritis Nodosa (Necrotizing Panarteritis) In Childhood With Meningeal Involvement, Am. J. M. Sc., **190:** 308–317, 1935.
47. Jones, G. M.: Periarteritis Nodosa With Case Reports, Ann. Int. Med. **16:** 920–940, 1942.
48. Weiss, Soma: Arteritis: Disease Associated With Inflammatory Lesions of The Peripheral Arteries, New England J. Med. **225:** 579–584, 1941.
49. McCall, M. and Pennock, J. W.: Periarteritis Nodosa: Our Present Knowledge of the Disease, Ann. Int. Med. **21:** 628–637, 1944.
50. Logue, R. B. and Mullins, F.: Polyarteritis Nodosa; Report of Eleven Cases With Review of Recent Literature, Ann. Int. Med. **24:** 11–26, 1946.
51. Karsner, H. T.: Primary Inflammation of Arteries, Ann. Int. Med. **11:** 164–174, 1937.
52. Curtis, A. C. and Coffey, R. M.: Periarteritis Nodosa: A Brief Review of the Literature and the Report of One Case, Ann. Int. Med. **7:** 1345–1358, 1934.
53. Spiegel, Rose: Clinical Aspects of Periarteritis Nodosa, Arch. Int. Med. **58:** 993–1040, 1936.
54. Riemann, H. A., Price, A. H. and Herbut, P. A.: Trichinosis and Periarteritis Nodosa, J. A. M. A. **122:** 274–279, 1943.
55. Krause, L. A.: Personal Communication.

TRAINING FOR PSYCHOTHERAPY*†

A Description of Organization, Treatment, Methods, and Results Achieved, with Case Illustrations

H. WHITMAN NEWELL, M.D.

BALTIMORE, MARYLAND

Before discussing the new treatment and training program organized at the Psychiatric Clinic in September 1947, a description of the clinic will be given and the reasons for starting this new program mentioned.

The Psychiatric Clinic operates under the joint auspices of the Mental Hygiene Society and the University Hospital. It is financed principally by the Community Chest, which contributes $43,700 a year. The University of Maryland contributes $4,000. plus space and many consummable supplies. The clinic studies and treats both children and adults who are referred by public and private social agencies, schools, and physicians, as well as the University Out-patient Departments. The major emphasis of the Clinic has always been on the treatment of selected cases.

The staff consists of 1 half-time and 2 full-time psychiatrists, 1 full-time clinical psychologist, 4 full-time psychiatric social workers and 4 secretaries. There are in addition 5 people in full-time training: 2 Fellows in Psychiatry, in their third year of specialization, 1 Fellow in Clinical Psychology and 2 second year students from the Smith College School of Social Work. The Psychiatric Clinic is 1 of 12 clinics in this country authorized for training by the American Board of Psychiatry and Neurology. The others are in Philadelphia, Boston, Hartford, Louisville, Cincinnati, Saint Paul, Wilkes-Barre, Pittsburgh, New Orleans and San Francisco.

The rate of referral of both children and adults has rapidly increased since 1946, with the result that most patients have to wait several months before treatment can be started. The same situation is true at the 2 psychiatric clinics which offer treatment at the Johns Hopkins Hospital. In fact, many physicians recently report that throughout the country every psychiatric clinic is overwhelmed with referrals, and has a steadily increasing list of people waiting for treatment. This increase in demand for psychiatric treatment since the war represents a greater awareness of the need for it which has been stimulated by publicity such as articles and movies. In addition there seems to be a greater actual demand for psychiatric treatment as a result of the effects of the war on veterans and on the civilian population.

---

* From the Department of Psychiatry, School of Medicine, University of Maryland, Baltimore, Maryland.

† Read at University Hospital Staff Meeting, December 16, 1948.

Since the emphasis of the training program has been on child guidance methods, the children have been seen more promptly than adults. The program herein described was organized to reduce the list of adults waiting for treatment. There are five hospitals in or near Baltimore which are authorized to train specialists in psychiatry. These are: Phipps Clinic, Sheppard and Enoch Pratt Hospital, Seton Institute, Spring Grove and Springfield State Hospitals. Of these only Phipps meets all the requirements of the American Board of Psychiatry and Neurology, in that it is the only place where men in training have an opportunity to work in an out-patient department. Prior to September 1947 several men at the other 4 hospitals asked for supervised training in psychotherapy at the Clinic of the University of Maryland. It was because of these requests and the increasing waiting list that a training program was organized for men who have had at least 1 year of training in psychiatry. These men meet 1 night a week for 3 hours, each one treating 2 patients under careful supervision. From September 1947, to August 1948 10 trainees worked under the supervision of 3 well qualified psychiatrists, 2 of the supervisors volunteering their time. These supervisors were: Dr. Hans W. Loewald and Dr. Richard Pembroke, in addition to the author. Starting in September 1948 this program was expanded so that at present 16 trainees treat patients under the supervision of 4 trained psychiatrists. Dr. Kathryn Schultz has joined the 3 supervisors mentioned. The trainees come from Sheppard-Pratt, Springfield, Spring Grove, Crownsville, Marine Hospital and private practice.

Before results are described, methods and the aims of treatment should be briefly discussed. As indicated, each patient is seen for an hour's interview once a week. It is assumed at the start that it is clear to both patient and doctor that the major difficulty is on a psychogenic basis. If this is not accepted by the patient, then psychotherapy can not be effective. It is believed that a careful medical work-up should precede psychotherapy. An early explanation is made to the patient that he will be given a trial period of treatment, for about 8 weeks. At the end of this period both doctor and patient will re-evaluate his condition and see whether further treatment is indicated or warranted. This trial period technique gives both the patient and doctor an "out" in case it seems obvious that this kind of treatment is not helping the patient.

The goal of such psychotherapy is to help the patient achieve sufficient insight into the causes and mechanisms of his inner conflicts so that he can feel more comfortable, get along with people more easily and be more efficient in his work and living generally. Cure, in the sense of perfection, freedom from all personality defects or complete guarantee against trouble in the future, is not expected, nor possible at present with any therapy.

In these interviews the patient is encouraged to talk as spontaneously as possible, with a minimum of questioning by the doctor. More permanent results can be achieved if the doctor avoids giving advice or making decisions for the patient. Whenever a patient wavers in a decision, he is helped to see the pros and cons; and the reasons for his indecision are discussed. By this method the patient is able to discover feelings, of love or of hate, which he has long repressed. Often neurotic symptoms are merely a substitute for emotions which the patient did not know he had. The road to the discovery and expression of these feelings is the relationship the patient develops with the doctor. In this sort of treatment the patient repeats his neurosis in miniature in the doctor's office, experiencing and expressing the various illogical ideas and childlike phantasies which are at the core of his neurosis. For example, 1 patient who thoroughly hated his father, but did not know it because he had repressed such feelings, poured out on his doctor the abuse he really meant for his father. If the doctor is able to "take" such expressions of emotion, without taking them personally and reacting to them, then the patient can discover how and why the repression of these feelings has made him sick, and he has a good chance to recover.

A brief description follows of what is meant by supervision in psychotherapy. As mentioned, each trainee sees 2 patients once a week for an hour. He then spends an hour every other week with his supervisor discussing 4 interviews. These discussions focus attention not only on what the patient says but also on the meaning and implications of what he says and does in terms of the factors causing his illness. The trainee is thus helped to become aware of the effects of strongly repressed emotions and how these effects can be observed in the doctor-patient relationship and thus brought to the awareness of the patient. These trainees are thus engaged in a vital learning process according to the best methods of professional training, namely by doing a job under skilled supervision.

As regards the results of treatment in this clinic, an analysis of the cases treated in 1947 to 1948 shows that 66 per cent showed marked improvement and were discharged from the clinic, 17 per cent showed slight improvement, and 17 per cent showed no improvement.

The following are some of the cases that were treated with relative success. Treatment often starts so long after referral that most physicians have little idea as to what happened to the case they referred. Also, what goes on in a psychiatric interview seems mysterious or mystical, depending on recent dramatic and fictional interpretations of the popular press and theater. The first case is presented in detail, to show what happened in treatment.

Mrs. M., a 37 year old white married woman with 3 sons, came to the clinic in 1946 asking for treatment of her 9 year old son Ralph, who was failing in school and who was stealing money. The boy was seen 12 times in treatment and discharged as improved. In her talks with the social worker Mrs. M. described her nervousness and expressed the wish for psychiatric treatment for herself.

This patient was seen 28 times between October 1947 and July 1948. To give an intimate glimpse of what these interviews are like the first and last two are presented as the doctor wrote them.

First interview: This patient is a 37 year old white woman, living with her husband and 3 sons. Her main complaint is a fear of closed places, particularly elevators. She is also afraid of locked doors and of crowds. She states that her sons, John and Ralph, are lacking in feelings of security in the home, and if she understands herself better, she will be able to help them more. She describes her anxiety about her children in that she is constantly running out of the house to see what they are doing or calling them in. She is not afraid that something will happen to them but that they will harm somebody else. Her husband, Mr. M., is a radio engineer, who until 9 years ago was in the Merchant Marine and was away from the home for long periods of time. At present, however, he works locally. The patient first noticed claustrophobic symptoms 2 years ago on Navy Day, when she was in a submarine with her family and there was a delay in the speed with which people were leaving the submarine. She began to feel anxious and hot, and finally an emergency hatch had to be opened to permit her to leave. Gradually she was able to go fewer and fewer flights in an elevator before her anxiety became overwhelming. At present she cannot enter an elevator at all. She feels comfortable in the examination room because the door is not locked and she knows she can get out. The patient believes that when she was a child her mother must have had a similar fear to a milder degree because she remembers not being permitted to do what other children were allowed to do. She remembered that about 10 years ago when her son John was leaving the City Hospitals after a herniorrhaphy, she and John were coming down in an elevator which stuck between floors. She became quite frightened but finally managed to stay with the elevator to the bottom where she got out. Her father died 5 years ago of cirrhosis of the liver. Her mother, age 73, is living and resides with the patient's only sister, who is 42 and single. There were no brothers. The patient states that her "mother's door was always open," that is, there was always a great deal of company in the home. There was a male cousin who when 7 or 8 years old came into the home, when she was of the same age. This cousin was resented enormously and remained in the home until he was about 13 or 14. The patient is a Baptist, her husband is Catholic but there is no conflict about religion. The children are Baptist. She is a high school graduate and worked as a stenographer for 2 years prior to marriage. She was diagnosed as having a psychoneurosis with phobic and anxiety features.

Second interview: The patient came into the office, closed the door herself and sat down. She seemed to be comfortable and relaxed. After a while she said that she felt that all the strain and mixed up feelings from which she suffers are no longer present, that for some time she has wanted treatment and now at last she is getting it. She associates her tension and anxiety with her home. She and her husband own the house and will live there indefinitely. After being away from home and feeling relaxed she begins to feel anxious as she walks up the street to the house. She is afraid she will hear that her children have done something bad, that they have broken an arm, or knocked out an eye or teeth, or put a rope around another child's neck. Most of these things that she fears will happen to other children have at some time or other happened to her own. On such occasions she would feel very angry, would like to tell the neighbors how she felt but would not. She realizes that she would like the same things to happen to the other children that happened to her own. She was told that her unexpressed anger and hostile wishes came out in the form of anxiety, that if what she wished would happen had actually happened to other children, her conscience would not permit her to think such thoughts. She was told about the unhealthy forms unrecognized and unexpressed anger takes. She also associates all sorts of responsibilities and frustrations with the house.

She was asked about her usual way of handling anger. She claims she expressed her anger in relationships with her father, who was an alcoholic, but was indifferent to her. He never disciplined her. She expressed anger towards her older sister with whom she had temper tantrums. She did not express anger towards her mother who was a disciplinarian in the home. She felt resentment towards her cousin, who was given preference by her mother. In her teens she was defiant towards her mother. She and her husband eloped.

During *treatment* it became obvious that the patient's mother was a neurotic, nagging woman with many phobias of her own. However, it took the patient a long time to discover that she felt a deep resentment against her mother. In fact she over-reacted, showed extreme concern for her mother. She was obsessed with a fear that her mother would die. Toward the end of treatment she admitted that her mother made her so angry at times that she wished she would die. After this she felt sure that her own claustrophobia was a self-punishing mechanism. Her fear meant that she should die for having such thoughts. Her marked concern that her children might harm someone was related to a childhood experience of her own. Her mother often told her about her sister who died as a child after being dropped. Two neighbor children died mysteriously after falls. Her mother frequently accused the patient of making them fall and blamed her for their deaths. As a result the patient has always been careful not to express anger. She feels that if one of her children harmed a neighbor child it would be her own fault. These illogical and neurotic fears gradually disappeared as she was able to face and discuss the feelings that lay back of them. The claustrophobia cleared up first, about the beginning of April. Her anxiety about her children improved but did not disappear until the first of July. The last two interviews will illustrate the status of the patient at the close of treatment.

Twenty-seventh interview: The patient states that she had a very pleasant week. She has been free from anxiety about her children. She believes that the realization that she was identifying herself with her children and was feeling as if she personally would be accused or criticized for their misdeeds was the most significant factor in obtaining freedom from this particular anxiety. When she used to walk down the street towards her home, she anxiously expected the neighbors to approach her and reproach her about what her children had done. This was really anxiety about being reproached concerning what she herself might have done. All this had its origin in the childhood atmosphere in which she grew up, when mother constantly cautioned her to be careful and warned her about possible harm she might inflict upon others by carelessness.

The patient's husband was home on vacation until Monday. She thought that perhaps his presence in the home had something to do with her freedom from concern about the children, but to her pleasurable relief, she discovered that even after he went back to work she continued to be free of anxiety. At one time she would wait anxiously and resentfully for her husband to return from work, so that he could take the responsibility for the children, and watch over them. Now she feels that it is no longer necessary for anyone to hover apprehensively over them, and this has made her relationship with her husband much happier. She no longer feels resentful or accusatory towards him for not being exaggeratedly concerned about the children.

In her new-found freedom it has been possible for her to embroider a very large tablecloth for her sewing club and she has experienced a great deal of fun in doing this. The possibility that she may continue to have anxiety about Richard from the basis of some guilt feelings towards him was considered again. She discussed the very difficult situation that the patient faced at the time she became pregnant with her youngest son Richard. The patient stated that she has at times said to Mr. M. that life would be so much easier if Richard had never been born. Mr. M. always tells her she shouldn't say or think such things, and perhaps this did make her feel guilty.

She again discussed the open door to her bedroom. She contrasted this with the closed door behind which she slept as a child and the terror she experienced when her mother had nightmares and she, the patient, could not get out of the room. She states that perhaps she has leaned over backwards in her effort to keep her children from experiencing the same sort of anxieties that she herself experienced as a result of her own childhood. Again the possible factors that lead to the patient's mother being so apprehensive and so restrictive and domineering were discussed.

When the patient left at the end of an hour, she said "Well, we'll soon be through. We have only a few more hours". This was said in a spirit of genuine accomplishment and of realization that further therapy was becoming unnecessary.

Twenty-eighth interview: The patient came in looking relaxed. She states that she is getting along very well. She is free from anxiety concerning the behavior of her children. She believes that her previous apprehensive restraining attitude towards the boys had the effect of making her second son a rather shy, nonassertive boy. However, even he seems to be adjusting better. She does not expect miracles and knows that her improved relationships with her sons will have a beneficial effect upon their freedom in growth. She asked how one handles anger.

Anger was discussed as a normal emotional reaction in contrast to a neurotic reaction. The patient stated that she becomes angry at times, but her anger is now brief and is expressed verbally with an occasional profane expletive. She said, "I can be angry and still accept the person with whom I'm angry." This is a tremendous advance. Previously, anger meant a rupture in the relationship with the person. She is able to express differences of opinion with her husband, children and others without feeling hostile or irrevocably estranged. The possibility of terminating therapy during this hour was discussed. This was agreeable. She was told that she would be able to get along adequately but that in case she felt the need in the future of seeing the psychiatrist again or coming to the clinic, it could be arranged. She stated that she knew that difficulties would arise just as they do for all human beings, but she feels equipped to handle them. The opportunity to talk things over and bring them out into the open was to her the most helpful part of the therapeutic relationship. The patient and doctor shook hands and parted.

This brief condensation of 28 hours of work naturally omits many details of history and gives an inadequate picture of the treatment process. Only in a sympathetic, non-condemning atmosphere could this patient discover the deeply buried thoughts and feelings that underlay her fears. Very little advice and interpretation was given in this case, the doctor spending most of his time encouraging her to express her real feelings.

Without going into as much detail, brief mention is made of 3 other treated cases.

F. H., a 20 year old colored man, married, with 1 child, was referred by the Neurology Clinic of University Hospital because of headaches and spells of vertigo and nausea for the previous 3 years. In addition he was irritable at home and unable to hold unskilled jobs. He was seen 34 times between October 1947 and June 1948. When he ceased treatment, he had been symptom free for several weeks and had been working steadily. His wife told him that he was much easier to get along with at home.

Miss C., a 30 year old white, single woman, was referred by a private physician because of vague gastric symptoms, palpitation, and feelings of weakness. She had many fears. Most of her symptoms dated back to childhood and came on in social gatherings, so that she had stopped going out. She was seen 33 times between October 1947 and July 1948. When she ceased treatment she was not symptom free but was markedly improved, felt comfortable in crowds and was engaged in many activities which she had never attempted before.

Mrs. L., a 27 year old white, married woman with 2 children, was referred by a State Hospital where she was diagnosed as having schizophrenia as well as a depression, and many neurotic fears. She was considered well enough to be discharged provided she could receive psychotherapy. She was seen 21 times between January and May 1948. During this treatment she was able to recall and discuss most of her delusions and bizarre phantasies and to gain some understanding of them. When treatment ended she had lost her fears, she was no longer depressed, she was realistic about her family problems and she was getting along better with people in general. She said she felt no need for further treatment.

One very important result of this new clinic is the development of a method which substantially cuts the cost of psychiatric treatment. Instead of hiring a psychiatrist to treat 1 patient per hour, as most clinics do, each staff psychiatrist is able to supervise the treatment of 4 patients per hour.

It is felt that the administrative and teaching techniques acquired in this experience can be extended to include Residents, Internes, practicing physicians and senior medical students. For these groups this training should be voluntary or elective. Since many people are neither suited by temperament nor genuinely interested in learning this type of therapy, it would be a mistake to make such training compulsory.

SUMMARY

This new clinic for training in psychotherapy is serving several useful functions. It is giving 16 psychiatric trainees their first experience of supervised psychotherapy in an out-patient clinic. It aids 5 hospitals by improving their training program. It provides for the simultaneous treatment of 32 patients, many of whom would not be receiving treatment without this program. It helps the Psychiatric Clinic by cutting down the period of waiting for the patients on its treatment list, as well as by cutting down the cost of treatment per patient. And finally, the University of Maryland benefits by becoming an important center for training in psychiatry.

TUBERCULOSIS CONTROL PROGRAM IN A MUNICIPAL GENERAL HOSPITAL*†

EDMUND G. BEACHAM, M.D.

BALTIMORE, MARYLAND

A health program for professional and non-professional workers at Baltimore City Hospitals has been planned to maintain health generally but particularly to protect against pulmonary tuberculosis. Baltimore has the highest tuberculosis death rate of any major city, cases occurring chiefly in the indigent group (1). Baltimore City Hospitals with 2025 beds, including its 700 bed Infirmary, and 800 employees, including 65 doctors and over 200 nurses, has been established to care for the indigent sick of Baltimore. It is obvious that a high percentage of patients have tuberculosis on admission (1).

Known cases of pulmonary tuberculosis are admitted from the Baltimore City Health Department clinics, seen briefly in the Department of Roentgenology, and sent directly to the tuberculosis division, housed in a separate building. It is inevitable that unsuspected cases of tuberculosis, many in an advanced state, will be admitted to the general wards with another disease or injury obscuring the pulmonary condition (2, 3). Even though seemingly adequate control precautions are established, it is impossible to avoid dangerous contact with unsuspected cases.

Because of renewed interest in tuberculosis and the uncovering of several cases among the professional staff during 1947 and 1948, a study of incidence among employees was carried out. During the period from 1935 to December 31, 1948 there were 62 cases considered to be tuberculosis discovered in 7800 employees. The yearly average was slightly more than 4 persons and the total incidence 0.79 per cent for the period. Turnover was rapid, particularly in the orderly group, and employment varied from a few days to the 15 year period. In mass chest surveys taken in Washington, D. C. and Philadelphia, Pa. it was decided that about 2 per cent of the groups studied had suggestive pulmonary disease, activity undetermined, and that after definite study 0.3 to 0.5 per cent had active pulmonary disease (4, 5). The National Tuberculosis Association assumes that active disease present in a community can be represented by multiplying the number of deaths per year by 10. In Baltimore about 750 deaths in 1948 would suggest over 7000 active cases. With our population under a million, the per cent incidence would be over 0.7 per cent, not far from the hospital employee figures.

---

* From the Tuberculosis Division, Baltimore City Hospitals, Baltimore, Maryland.

† Received for publication March 25, 1949.

These statements are necessarily rough estimates but do show a high community incidence along with a high employee incidence.

The group studied seldom had proved tuberculosis and in most instances chest roentgenographs were not taken on admission to aid in dating the disease. For example, during the 2 years 1947 and 1948 5 cases were among staff physicians. One converted from a negative tuberculin test during her tenure, developed a primary parenchymal lesion, rested a year, and returned to interneship. The other four were reported tuberculin positive at medical school or before. One came to the hospital with pleurisy, developed effusion within a month and returned home. Two developed minimal apical lesions sometime during their stay, were followed closely, did not show acid fast bacilli on gastric cultures and guinea pig innoculations, and were allowed to continue work with retrogressive parenchymal changes. The fifth showed a progressive infraclavicular infiltration and returned home for a year. In no instances were tubercle bacilli isolated. These cases are typical and demonstrate the difficulty in diagnosis, activity of process, and evaluation of the source of infection.

Before July 1, 1948 control measures against tuberculosis were not well coordinated and enforced according to the incidence of disease. At that time a committee studied the problem, and as a result certain recommendations were made. A full time physician was given charge of the control program and urged to work closely with the chief of radiology.

The tuberculosis control program now in effect at Baltimore City Hostals is:

1. *Chest roentgenographs of all admissions*—If a 14 by 17 inch film is not taken, a 70 mm. photofluoroscopic film is made. Reports are usually made in 24 to 48 hours. Some accident cases, imminent deliveries, and a few other patients receive chest films as soon as practicable.
2. *Isolation of known or suspected cases of pulmonary tuberculosis.*
   a. *General Hospital*—Tuberculosis suspects are tagged as soon as possible, preferably in the accident room. Gown and mask technique is urged for personnel handling these cases. This has been difficult to impress upon visiting physicians. Patients are masked before being sent through the roentgenographic division. On the wards suspicious cases are isolated. Special handling is carried out for all contaminated articles including bed clothes, trays, and dishes. Free use of soap and water in hand washing is advised. Educating the patients in cough control and careful handling of sputum is difficult. Many patients are admitted in extremely poor condition and cannot follow orders; others cannot understand these requests. As soon as a diagnosis of tuberculosis is made, a request is forwarded to transfer the patient to the tuberculosis division. Separate toilet facilities for tuberculosis patients

are available on the surgical division, where much chest surgery is done.

b. *Tuberculosis Division*—This division has about 250 beds for male and female, white and colored in about equal proportion. An attempt is made here to practice strict aseptic technique as outlined by McNett and Ellison (6, 7). The fundamentals of this are cap, gown, and mask technique; soap and water hand-washing facilities in abundance; Lysol or Hycol disinfection of contaminated instruments or equipment; burning of sputum cups and tissues; and careful education of patients in cough control and sputum disposal.

3. *Frequent Examination of Employees*—

Each employee on entering service is given a physical examination including a chest roentgenograph, usually the 70 mm. type. After this, whenever an employee needs medical care he is seen by accident room physicians.

Each 3 months beginning July 1948 all employees have been given a chest roentgenograph. Reports are sent to departments chiefs and to the physician in charge of the health program. Suspicious cases are followed up with necessary physical examinations or hospitalization. Employees found to have active tuberculosis are promptly hospitalized in the Tuberculosis Division. Reports are sent to the Health Department so that outside contacts can be examined.

4. *Control Measures for the Professional Staff*—

Physicians and nurses receive the same examinations and tri-monthly roentgenographs as other employees. It is recognized that there is a great tuberculosis hazard in this group carrying out all routine duties (8). Since July 1948 this group and all incoming classes of student practical nurses have been given tuberculin tests. Non-reactors to first and second strength purified protein derivative (1:50,000 and 1:200 dilutions) have been offered bile calmette Gueriń vaccination.

Fourteen of 15 non-reactor physicians received 0.1 mgm. bile calmette Gueriń intradermally in the deltoid region on July 29, 1948 and within 2 months all were tuberculin positive. All developed slight ulceration at the site of inoculation, none had serious adenitis, and all had healed in from 6 to 8 weeks. Since then 32 nurses have been given bile calmette Gueriń prophylaxis with similar results. It is hoped that this procedure will produce some enhancement of immunity or resistance to tuberculosis—This remains to be seen though several well authenticated reports have noted a greater than six-fold incidence of morbidity and mortality in non-protected controls over bile calmette Gueriń vaccinated groups (10, 11). It would have been better to isolate vaccinated persons from tuberculosis contact during their conversion period but they were working on the wards and in addition at all times they were exposed to multiple community civilian contacts.

Nurses aids and orderlies certainly undergo a great hazard too but this group has such a rapid turnover that bile calmette Guerin vaccination has not been carried out.

5. *Infirmary Examinations*—Special attention is being paid to patients in the infirmary. A fairly high incidence of tuberculosis in the aged has been noted here, and this fact has been ably documented by Wiese and J. A. Myers (13). Frequent medical examinations are carried out at the infirmary dispensary and roentgenographs taken on suspicious cases. During the spring of 1949 a mass chest roentgenographic survey will be done on infirmary patients with a portable unit loaned by the Maryland Tuberculosis Association. Cases needing further study will be followed by the tuberculosis, medical, and radiology staff of the hospital.

CONCLUSION

A health program has been planned at the Baltimore City Hospitals to safeguard employees, particularly against pulmonary tuberculosis. This program includes (1) Chest roentgenographs of all hospital admissions; (2) Isolation of known and suspected cases of tuberculosis; (3) Entrance and periodic examination of personnel including tri-monthly chest roentgenographs. (4) Tuberculin testing and offer of bile calmette Guerin prophylaxis to physicians and nurses; (5) Chest roentgenographic survey of Infirmary inmates.

BIBLIOGRAPHY

1. Brailey, M. T.: The Problem of Care for the Tuberculous Patient in Maryland, The Councilor **13:** (Sept. 19), 1948.
2. Childress, W. G.: Overcoming an Occupational Hazard, Nat. Tuberc. Bull. (March 1949), pp. 39–40.
3. Oatway, W. H.: Management of Tuberculosis in General Hospitals Council on Professional Practice; American Hospital Association 1946.
4. Symposium Mass X-ray Surveys; March 19, 1948; American College Chest Physicians, Philadelphia, Pennsylvania.
5. Mass Survey Reports Washington Metropolitan Area, October 28, 1948, Glenn Dale Sanatorium, Maryland.
6. McNett, Esta and Ellison, Bess: Basic Principles of Aseptic Technique, Anti-Tuberculosis League of Cleveland and Cuyahoga County Review, 1940.
7. Veterans Administration Technical Bulletin—TB10A-38: Precautionary Measures, Aseptic Technique, May 6, 1948.
8. Rosenthal, S. R.: B.C.G. Vaccination and Tuberculosis Control in Hospitals, Am. J. Nursing **48:** 783, 1948.
9. Aronson, J. D.: Protective Vaccination Against Tuberculosis with Special Reference to B.C.G. Vaccination, Am. Rev. Tuberc. **58:** 255, 1948.
10. Seminar on B.C.G., Am. Rev. Tuberc. **57:** 95, 1948.

11. Birkhaug, K.: B.C.G. Vaccination in Scandinavia—20 years of Uninterrupted Vaccination Against Tuberculosis, Am. Rev. Tuberc. **58:** 255, 1948.
12. Wiese, E. R.: Tuberculosis in the Aged—A Statistical Study, Am. Rev. Tuberc. **41:** 210, 1940.
13. Myers, J. A.: Old Age: The Last Stand of the Tubercle Bacillus, Geriatrics **3:** 197, 1948.

URETHANE IN LEUKEMIA*

BENEDICT SKITARELIC, M.D. AND W. A. VAN ORMER, M.D.

CUMBERLAND, MARYLAND

The following is the report of a case of myelogenous leukemia in an 8 year old child. This condition was first recognized 28 months ago and the patient has been under treatment with urethane for the past 21 months.

Leukemia is an invariably fatal disease and quite often not recognized. More than 5,000 persons have died from leukemia in the United States each year since 1940, and, in 1942, more died from leukemia than from smallpox, meningococcus meningitis, scarlet fever, poliomyelitis, malaria, typhoid fever, and diphtheria combined. The incidence seems to be increasing (3).

According to Osgood (2), the essential features of leukemia are a disorder in cell growth, with abnormalities of cell size, increased and uncontrolled rate of cell division, and failure of maturation and release, together with a shortened life span of the cell. The specific therapies so far proposed which have demonstrated beneficial effects on the fundamental cellular disorder are: ionizing radiation; urethane; nitrogen mustards; benzol; the arsenicals; and, in plasmocytic leukemia, stilbamidine.

Life expectancy varies from a few weeks in the most acute of acute cases to as long as twenty years in some of the most chronic of the chronic cases. This fact makes evaluation of therapy difficult.

Since the reports of Haddow and Sexton (1946), and Paterson and Haddow, et al. (1946) have been published on the influence of urethane (ethyl carbamate) on experimental animal tumors and on human leukemia, much interest has been stimulated in the treatment of leukemia by this method (1). Although the mode of action of the drug is unknown, there are cases in which a favorable response in myelogenous leukemia has been noted. There is as yet, however, no indication that permanent benefit or cure may result from its use in either myeloid or lymphatic leukemia.

Urethane (ethyl carbamate), $CO(OC_2H_5)NH_2$, forms colorless, odorless crystals of saline taste, which are soluble in water and alcohol. It has an hypnotic action, which is feeble in man, and patients soon become tolerant of it. The drug is often used as a laboratory anesthetic. It decreases oxygen consumption and somewhat raises the carbon dioxide threshold of the respiratory center. (Large doses in rabbits cause vacuolar degeneration of the hepatic epithelium.) It also lowers the phenolsulfonphthalein output and produces hyperglycemia, independent of the quantity of liver glycogen and epinephrine, and *unaffected* by the pituitary. Bang (1914) believes that it acts through pancreatic degeneration. It is excreted as urea. The average dose is usually given as one gram (4).

---

* Received for publication March 9, 1949.

The drug has been considered relatively safe and nontoxic, but, before widespread use is advocated, more should be learned about proper procedure, dosage, toxic levels, and its mode of action. Webster (5) reported 2 cases of fatality after treatment with urethane for myelogenous leukemia, and 2 other cases with probable ill effects. The drug produces a rise in the red cell and hemoglobin levels. There is a fall in total white cell counts to within normal limits and a tendency for the differential count to approach a more normal pattern, and a diminution in the size of spleen and lymph nodes. These results are remarkably similar to those obtained by standard methods of deep roentgen ray therapy. There is, however, no attempt in this communication to compare the two procedures. The ease of administration of urethane, however, has some advantage in particular cases.

REPORT OF CASE

The patient was an 8 year old boy, 1 of 7 children, who was admitted to the Memorial Hospital in Cumberland, Maryland, on November 6, 1946, because of pain in the left hip and a limp of several days duration. He had a fever for 2 days before admission. His mother denied a history of any recent or past illnesses, or any illnesses in the family. Examination showed a well developed and fairly well nourished boy in no apparent distress. The pupils were central and equal and reacted well. The neck contained only a few small, anterior and posterior cervical nodes. The lungs were clear. There were no cardiac murmurs. The abdomen was protuberant, and no masses were palpable. The spleen and liver were not enlarged. A rectal examination was negative for blood, masses, or tenderness. In the axilla and both femoral triangles, there were a few non tender nodes. The extremities showed no abnormalities, except for the tenderness in the left hip and inability to flex the knee. The impression at the time was that this was not a surgical condition, and the patient was transferred to the medical service.

The roentgenograph of the hip showed no evidence of any abnormality. The blood count was 4,160,000 red cells, 181,000 white cells, with 71 per cent hemoglobin. The differential count was myeloblasts, 23 per cent; myelocytes, 47 per cent; neutrophils, 10 per cent; lymphocytes, 12 per cent; eosinophils, 8 per cent. A diagnosis of an early chronic myelogenous leukemia with acute exacerbation was made.

Clinical course: The patient was treated symptomatically and received hot compresses over the left hip. His temperature on admission was 103° and returned to normal within 24 hours. On the eleventh hospital day, he began having nosebleeds and blood in his stools. He was given 250 cc. of blood and in a few days was much improved. His total stay in the hospital was 6 weeks. His total white cell count and differential count remained appreciably the same. The red cells were reduced to 3,690,000. He was discharged as improved.

He was readmitted on December 29, 1946, and kept under observation until January 19, 1947. During this period, no specific medication was attempted, and his white cell count was 138,000. The red cell count was 3,490,000. The child was readmitted on January 22, 1947. He received 500 cc. of blood and remained in the hospital several days. He was not heard from until April 2, 1947, at which time he reported to the hospital for a blood count. His red cell count was 3,940,000, with a 246,000 white cell count. The hemoglobin was 55 per cent; neutrophils, 47 per cent; myeloblasts, 47 per cent; lymphocytes, 2 per cent; eosinophils, 4 per cent. He was not seen again for two months until he was admitted to the hospital on June 4, 1947. It was decided at that time to use urethane. The total white count was 212,500. The patient was started on 2 grams of urethane daily on June 10, 1947. This was reduced to 1 gram daily on his discharge June 27, 1947. He was advised to return in 2 weeks for a blood count but was not seen until 4 months later (October 27, 1947), at which time his blood count was as follows: red cells, 3,940,000; white cells, 8,700; hemoglobin, 75 per cent. His differential count at this time was: neutrophils, 68 per cent; lymphocytes, 16 per cent; eosinophils, 14 per cent; basophils, 1 per cent; myelocytes, 1 per cent. Six weeks later (December, 1947), the white cell count was 13,650, and the red cells were 4,000,000. At this time, it was decided to discontinue urethane, and the patient was advised to return periodically, but was not seen until June 10, 1948, at which time his total white cells were 68,650, and the red cells were 4,010,000. The differential count showed neutrophils, 64 per cent; lymphocytes, 20 per cent; myelocytes, 10 per cent; eosinophils, 5 per cent. It was decided at this time to give more urethane. He was placed on 1 gram 3 times daily, and, in 4 months, the white cells dropped to 22,950. He continued urethane, and his white cells decreased to 17,000. This was December 14, 1948. The patient reappeared on January 31, 1949, and the white cell count was 27,500, and the red cells were 4,200,000. It was believed that he was still taking his usual dosage of urethane, but on February 10, 1949, the mother stated that she had not been faithful in the last 2 months in its administration. At this time, however, his red count was 5,500,000, and the white cells were 45,900. The differential was as follows: neutrophils, 58 per cent; lymphocytes, 6 per cent; eosinophils, 10 per cent; myelocytes, 20 per cent; basophils, 2 per cent.

The child's general condition was fairly good all through this course. He attended school regularly and had no complaints. His cervical, axillary, and inguinal lymph nodes were slightly reduced in size. The spleen and liver did not become palpable.

There was one occasion of nausea reported during his course of treatment. This was relieved by changing the elixir from syrup of orange to syrup of cherry.

COMMENT

Evaluation of therapy in leukemia is difficult. In the above case, there appears to be a definite beneficial effect as evidenced by the patient's clinical condition and reduction of white cells. By manipulation of dosage, it has been possible to achieve a desired result.

At times, a diagnosis of leukemia from the peripheral blood would have been practically impossible, if the history of the case was not known.

Sternal marrow studies were not done because the diagnosis was evident from the beginning. Except for slight nausea, which was easily remedied, there were no toxic manifestations. During the period in which urethane was discontinued, there was a steady rise in the white cell count. This is also borne out by the mother's laxity in its administration in the recent course.

BIBLIOGRAPHY

1. Haddow, A. and Sexton, W. A.: Influences of Carbamic Esters (Urethanes) on Experimental Animal Tumours. Nature, London, **157**: 500, 1946.
2. Osgood, E. E.: Differential Diagnosis and Treatment of the Leukemias. Northwest Med. 47 (Nos. 3 & 4): 181 and 257 (March, April) 1948.
3. Sacks, M. S. and Seeman, I.: A Statistical Study of Mortality from Leukemia. Blood **2**: 1, 1947.
4. Sollman, T.: A Manual of Pharmacology and Its Applications to Therapeutics and Toxicology, Philadelphia, W. B. Saunders Co., 1937, p. 743.
5. Webster, John Joseph: Urethane in Leukemia. J. A. M. A. **135**: 901 (Dec. 6) 1947.

SOLITARY DIVERTICULITIS OF THE CECUM*

GEORGE A. STEWART, M.D., F.A.C.S. AND JAMES N. CIANOS, M.D.

BALTIMORE, MARYLAND

Although diverticulitis of a solitary diverticulum of the cecum is an uncommon lesion, nevertheless it should be considered when a differential diagnosis of a mass in the ileo-cecal area is to be made. Even when the abdomen was open, a mistaken diagnosis of carcinoma was made in 33 per cent of 100 cases reported by Anderson (1). This error necessitated a widespread resection rather than a relatively simple procedure. When it is realized that most of these cases are explored for a pre-operative diagnosis of acute appendicitis, one can readily understand that the patient is ill prepared for any such formidable procedure.

Bennett-Jones (2) in 1937 made the first attempt to tabulate all cases of solitary diverticula reported in the English literature. He found 27 cases in all. In 1943 Carlisle and Baker (3) raised the number to 37 and added 3 more cases of their own. The most comprehensive review was published by Anderson (1) in the proceedings of the Mayo Clinic. In 700 cases in which surgery was indicated for diverticulitis, 9 solitary diverticula were found. Another 91 cases were culled from the literature, making the total 100.

On the other hand diverticula of the remaining colon are quite common. Only 2 per cent of 151 cases of uncomplicated diverticulosis studied by Ochsner and Bargen (4) occurred on the right side. Statistics from the Mayo Clinic (5) indicate an incidence of 5.7 per cent of diverticula in routine roentgenologic examinations and 6.9 per cent autopsy material.

Why solitary diverticulum of the cecum occurs so rarely or why it occurs at all is difficult to explain. Collender (6) states the cecum is devoid of appendices epiploicae and is the thinnest part of the colon. As with diverticula elsewhere there are two types: the false, in which some part of the muscularis is missing, and the true in which all coats of the intestinal wall are present. Greensfelder (7) feels that false diverticula may be caused by:

(1) An erosion of the cecal wall between two constrictive adhesive bands.
(2) Traction of an adhesion on the cecal wall.
(3) Erosion at the stump site of an appendectomy as a result of migration of silk sutures into the cecum.
(4) Weakness following rupture of a stump abscess into the cecal lumen.

McGrath (8) states that loss of tone and elasticity of the muscle layer may occur because of a degenerative process. A relaxed segment may then be caught between two contracting segments and a herniation started.

---

* Received for publication February 21, 1949.

Schnug (9) found the sex distribution to be 57.8 per cent in females and the average age about 40.2 years. He mentioned 2 cases occurring under 20 years of age.

A diagnosis is not easily made even after the abdomen is open. Pre-operatively, most cases are thought to be acute appendicitis. The signs and symptoms of acute solitary diverticulitis show a striking similarity to those of acute appendicitis (10, 11). Beck and Hopkins (12) diagnosed one case pre-operatively. In only 63.4 per cent of the cases reported by Anderson (1) was the condition recognized at laparotomy. Most of the lesions occupy a position on the lateral anterior wall and some on the medio-posterior wall (13). A frozen section may be considered or the mass may be excised elliptically and examined as was done in the case herein reported. Occasionally a finger may be invaginated through the cecal wall into the opening of the diverticulum (9) thereby establishing the true identity of the lesion.

There is much controversy as to the correct method of handling such a lesion once it is recognized. Schnug (9) feels that because of acute inflammation of the cecum, nothing should be done except draining of an abscess if present. Gatewood (14) advocates local excision and appendectomy while Jonas (15) and Owings (16) feel that a resection of the entire colon and cecum with a transverse-ileo-colostomy should be done. On the other hand Frehling (17) advocates a cecostomy through the diverticulum. The diverticulum is excised and then sutured to the parietal peritoneum thus creating a fistulous opening to the exterior.

CASE REPORT

The patient, a forty-nine year old white male, was admitted to St. Agnes' Hospital on December 29, 1947 with a complaint of abdominal pain of 3 days duration. The pain began and was localized in the right lower quadrant as a dull steady ache with no radiation from its original site. There was no nausea or vomiting. The bowels had been regular with no history of bloody, tarry, or alcoholic stools. There was no history of a previous similar attack, and the remaining systems were non-contributory to the present illness. On examination the abdomen appeared moderately distended but symmetrical. There was no visible peristalsis and borborygmi were reduced but not absent. There was moderate tenderness, rigidity, and rebound tenderness in the right lower quadrant. No masses, herniae, or solid viscera could be palpated. The white blood count was 11,200 with 88 per cent filamented, 3 non-filamented, 3 lymphocytes, and 8 monocytes. The red blood count was 4,010,000 and the hemoglobin was 11.2 gms. The blood Hinton and Kahn were negative and blood urea was 22 mgm. and the sugar 144 mgm. The urine showed a specific gravity of 1.030, no albumen, no red or white blood cells, and 2 plus sugar.

It was decided that the clinical aspects were those of an acute appendicitis, and the patient was prepared for a laparotomy. Following the administration of a spinal analgesic the abdomen became less distended and a definite mass was then felt in the right iliac fossa which was thought to be an abscess. The abdomen was prepared with ether and aqueous zephiran and a celiotomy was done through a McBurney incision. The omentum which was injected and edematous covered the ileo-cecal area. This was carefully separated disclosing a mass in the cecum about 6 x 5 cm. in size. This mass was moderately inflamed, rather firm and elastic to the palpating fingers. It arose from that part of the cecum which lay anterior and distal to the termination of the ileum. Since there was a margin of normal appearing cecum around the lesion, and since the remaining ascending colon and the appendix seemed normal, it was decided to perform an elliptical excision of the mass. On removing and examining the mass its true nature was easily understood. There was a small aperture leading into the lesion which was filled with a large fecalith. The cecal wall was easily approximated with 00 atraumatic catgut followed by a layer of interrupted Lambert sutures of A silk. The terminal ileum was then sutured to the cecum in order to buttress the suture line. The appendix was removed per routine.

Post-operatively the patient ran a fever of 105.4 which followed the administration of whole blood. The temperature fell to normal on the fourth day and the patient was discharged on the eighth day. The follow up over a period of 6 months showed a complete recovery without any residual symptoms.

An examination of the specimen revealed a globular mass measuring 6 x 5.3 cm. in size. It was covered in part by serosa and a small fragment of attached fatty tissue. On one side was an elliptical piece of tissue which appeared to be intestinal wall and mucosa. The mass had a rubbery and somewhat elastic consistency. There was a small entrance 3 cm. in diameter leading into the center of the mass. The lining of the cavity appeared to be normal mucosa. The walls were somewhat thickened and the outer coats were fibrotic, hyperemic, and discolored. Microscopic sections showed a normal mucosa lining throughout. Within the wall of the diverticulum there was a diffuse leukocytic infiltration accompanied by scattered areas of liquefaction necrosis. The submucosa and muscular coats showed a diffuse fibroblastic change and almost complete obliteration of structure. A thin layer of exudate was found on the serous surface. The muscularis was hardly recognizable.

The appendix on section showed a moderately dilated lumen containing fecal material. The epithelium appeared intact throughout and the lymphoid stroma was abundant and normal. There was a fibro-fatty change within the submucosa and the outer coats were otherwise normal.

SUMMARY

A case of acute diverticulitis of a solitary diverticulum of the cecum has been reported. This condition should be considered in any mass located in the ileo-cecal area in order that proper treatment be carried out. Although there is much controversy as to the exact method of handling the diverticulum, it is felt that local excision is the method of choice. The lesion can then be examined and if it proves to be carcinoma, further surgery can be performed. If, because of the size or position of the diverticulum, or because local excision is impossible because of widespread inflammation, a cecostomy through the diverticulum can then be done. A widespread resection is felt to be too radical for such a benign lesion, and the patient would probably be better off if nothing were done other than draining of an abscess if present. The diverticulum may then be removed when in a quiescent state if so desired.

BIBLIOGRAPHY

(1) Anderson, L.: Acute Diverticulitis of the Cecum: Study of Ninety-one Surgical Cases. Surgery **22**: 479–488, 1947.

(2) Bennett-Jones, M. J.: Primary Solitary Diverticulitis: Report of Three Cases, with a Review of 27 Recorded Cases. Brit. J. Surg. **25:** 66–78, July 1937.

(3) Baker, J. W. and Carlisle, T.: Solitary Diverticulitis. J. A. M. A. **122:** 354–356, (June) 1943.

(4) Ochsner, H. C. and Bargen, J. A.: Diverticulitis of the Large Intestine: An Evaluation of Historical and Personal Observations. Ann. Int. Med. **9:** 282–296, (Sept.) 1935.

(5) Anderson, L.: Perforated Diverticulum of Cecum with Peritonitis. Proc. Staff Meet., Mayo Clin. **21:** 465, 1946.

(6) Collender, L. C.: Surgical Anatomy, ed. 2, Philadelphia, W. B. Saunders, 1943 pp. 375–376.

(7) Greensfelder, L. H., and Hiller, R. F.: Diverticulosis with Special Reference to Traumatic Diverticula: Surg. Gynec. & Obst. **48:** 786–795, (June) 1929.

(8) McGrath, B. F.: Cited By Boyd: Surgical Pathology, ed. 6, Philadelphia, W. B. Saunders, 1947, pp. 273–278.

(9) Schnug, E.: Acute Diverticulitis (Difficulties of Differentiation From Acute Appendicitis) Surgery **13:** 282–289, (Feb.) 1943.

(10) Reid, M. R., Poer, H. D., and Merrill, Paul: Statistical Study of 2,921 Cases of Appendicitis. J. A. M. A. **106:** 665–669, 1936.

(11) Fairbank, J. H., and Rob, C. G.: Solitary Diverticulitis of Cecum and Ascending Colon. Brit. J. Surg. **35:** 105–107, 1947.

(12) Beck, W. C., and Hopkins, G. S.: Solitary Diverticulitis of Cecum: Report of 5 Cases. Guthrie Clin. Bull. **17:** 12–14, 1947.

(13) Noon, Z. B., and Schank, H. L.: Solitary Diverticulitis, Am. J. Surg. **68:** 364–368, (June) 1945.

(14) Gatewood, J. W.: Solitary Diverticulitis, Report of 2 Cases. Ann. Surg. **122:** 52–58, (July) 1945.

(15) Jonas, A., Jr. Solitary Diverticulitis, J. A. M. A. **115:** 194–197, (July 20) 1940.

(16) Frehling, S.: Diverticulitis of the Cecum: A Method of Management. Ann. Surg. **121:** 83–87, (Jan.) 1945.

METHEMOGLOBINEMIA IN AN INFANT CAUSED BY WELL WATER*†

MILES E. DRAKE, M.D., PH.D. AND FREDERICK GO KIATSU, M.D.

BALTIMORE, MARYLAND

Cyanosis in the neonatal period is not uncommon, and when it occurs, it is thought to be of cardiac, pulmonary or central origin. However, there are other causes of cyanosis which may be equally as devastating and which require immediate diagnosis and treatment. Such a case is presented:

CASE HISTORY

S. S., a 12 day old, white female, was admitted to the Pediatric Service, University Hospital on December 31, 1948, at 10 P.M. with intense cyanosis of 24 hours duration and with a presumptive diagnosis of atelectasis. The infant was full term, delivered spontaneously, following an uneventful pregnancy and labor. She breathed normally at birth; the cry was good, and no cyanosis was noted. Her birth weight was 7 lbs. 4 ounces. The mother and child were discharged from the hospital 4 days following birth in good condition. The infant was bottle fed on a formula consisting of 6 ounces of evaporated milk, 12 ounces of water and 2 tablespoons of Dextro Maltose #1. The amount and time of feeding were 3 ounces every 4 hours, 6 times a day. Her course was uneventful, and she gained weight normally. At 10 P.M. December 30, 1948, it was noted that she was cyanotic. The cyanosis became progressively worse, but no dyspnea was noted. Hospitalization was advised by the local physician on December 31, 1948.

A physical examination on admission revealed a well nourished, intensely cyanotic white female infant in no respiratory distress. Cyanosis was not altered by crying or by the administration of oxygen. The skin was warm and moist. There was no tenderness or bulging of the fontanels. The pupils were round and regular and reacted to light. An examination of the fundus of the eyes was negative. The mouth, throat and pharynx were negative except for an intense cyanosis of the mucous membranes. The neck was negative and the chest was clear to percussion and auscultation. The heart was of normal size and contour; no murmurs were heard. The point of maximum impulse was in the fourth intercostal space at the mid-clavicular line. The abdomen was soft, and the liver was palpable one finger breadth below the costal margin in the nipple line. The femoral pulsations were good. The rectal temperature was 99.4 F., pulse 128, respirations 60. The infant weighed 8 pounds 6 ounces.

A roentgenologic examination of the chest showed the lung fields clear and the heart of normal contour with a normal cardio-thoracic ratio. The aorta was in normal position. The result of the hemogram was as follows: hemoglobin 16 gms. = 107 per cent; 5,800,000 erythrocytes; 10,500 leucocytes with a differential of 51 polymorphonuclear cells, 48 lymphocytes and 2 monocytes. The urinalysis was negative.

Since the physical examination revealed no cause for the cyanosis, it became imperative that some other explanation be sought. Further questioning of the mother revealed that the infant's formula was prepared from boiled well water. This additional information gave the clue to the correct diagnosis. A blood sample was drawn for spectroscopic examination and methemoglobin determination. The spectroscopic examination showed the predominant band at 634 mu. which disappeared on adding sodium cyanide solution, and the methemoglobin was 10.8 gms. as determined by the method of Stadie (17) and McEllroy (13). The infant was then given 400 mgm. of ascorbic acid intramuscularly, which was repeated every 4 hours for three doses. The response was dramatic and spectacular, for within 2 hours, she was less cyanotic and by 8 A.M. January 1, 1949, she was acyanotic, eating well and none the worse for her experience. On January 1, 1949, the methemoglobin was 0.7 gm.

---

* From the Department of Pediatrics, School of Medicine, University of Maryland.

† Received for publication February 15, 1949.

An examination of the well water showed 1000 parts per million of nitrates and a total solids of 9.5 gm. per 100 cc. The nose and throat culture grew out Escherichia coli as did the gastric contents.

DISCUSSION

Cyanosis resulting from methemoglobin has been of considerable interest to the pediatrician since Comly (2), Faucett and Miller (4) and then Ferrant (5) showed that such cyanosis in infants might be caused by drinking well water containing nitrates and nitrites.

Methemoglobin formation can also occur from the use of bismuth subnitrate (15) in the treatment of diarrhea in infants, and consequently bismuth subcarbonate has been used. The aniline dyes in crayons (1, 8, 11, 14, 16), sulfanilamide, acetanalid, phenacetin and sulfadiazine (19) and even more recently promin (3), which is used in conjunction with streptomycin in the treatment of tuberculosis, have been shown to produce methemoglobinemia.

Recently Cornblath and Hartmann (3) have shown that only infants who have a gastric juice pH of greater than 4.0 plus nitrate reducing bacteria in the upper gastro-intestinal tract devlop meethemoglobinemia from the oral ingestion of water containing nitrates. Marriott, Hartmann, and Senn (12) had previously shown a characteristically low gastric juice acidity in the neonatal period. It has been established (3, 12) that E. coli and Eschorichi freundi and Aerogenes aerogenes are all capable of reducing nitrates to nitrites and that all will grow in a media of pH 5.0 to pH 7.0 but will not grow in a media of pH 4.0 or below. It is also known that water containing in excess of 30 parts per million of nitrates is considered as unsafe water.

The presence of E. coli plus a high concentration of nitrates in the water used in preparing the infant's formula provided the chemical stage in this patient for the reduction of the nitrates to nitrites by the E. coli in the upper gastro-intestinal tract with resulting absorption of the nitrites. The absorbed nitrites are further reduced with oxidation of the ferrous iron in hemoglobin to ferric iron, and the resulting methemoglobinemia and cyanosis becomes a clinical entity which, if untreated, may result in death because of peripheral circulatory failure.

The treatment of choice is probably methylene blue (10, 18) in 1 to 2 mg. per Kgm. doses given intravenously; however, methylene blue administration is not without risk as it has an acetylcholine-like action. The intramuscular administration of ascorbic acid is safe and represents a powerful reducing agent somewhat slower than methylene blue in action, but available in all hospitals and in most community drug stores. The rationale of treatment is to reduce the ferric iron of methemoglobin to ferrous iron of hemoglobin which is capable of combining with oxygen and thus preventing tissue anoxia. Finch (6, 7) states ascorbic acid reduces methemoglobin slowly in vivo and even in large doses does not approach the speed of the normal cell-reconversion. Ascorbic acid is of little value, therefore, in conditions in which the normal cell-reconversion mechanism has been exceeded. Harrop and Barron (9) observed that red cell respiration and carbohydrate utilization are markedly increased by methylene blue. In tissue respiration methylene blue is able to substitute for the cytochrome enzymes.

However, it has been shown (19) that ascorbic acid does function in secondary methemoglobinemia but slower than methylene blue.

SUMMARY

1. A case is presented of methemoglobinemia resulting from the ingestion of well water with a high nitrate concentration.

2. The dramatic response and clearing of the cyanosis by the use of 400 mgm. of ascorbic acid intramuscularly every 4 hours for 12 hours was demonstrated.

3. The treatment is simple and dramatic, provided the syndrome is thought of and diagnosed.

BIBLIOGRAPHY

1. Clark, E. B.: Poisoning Due to Ingestion of Wax Crayons, J. A. M. A. **135**: 917, 1947.
2. Comly, H. N.: Cyanosis in Infants Caused by Nitrates in Well Water, J. A. M. A. **129**: 112, 1945.
3. Cornblath, M. and Hartmann, A. F.: Methemoglobinemia in Young Infants, J. Pediat. **33**: 421, 1948.
4. Faucett, R. L. and Miller, H. C.: Methemoglobinemia Occurring in Infants Fed Milk Diluted with Well Water of High Nitrate Content, J. Pediat. **29**: 593, 1946.
5. Ferrant, M.: Two Cases of Methemoglobinemia in Newborn Infants Caused by Nitrates in Well Water, J. Pediat.: **29**: 585, 1946.
6. Finch, C. A.: Treatment of Intracellular Methemoglobinemia, Bull. New England M. Center **9**: 741, 1947.
7. Finch, C. A.: Methemoglobinemia and Sulfhemoglobinemia, New England J. Med. **239**: 470, 1948.
8. Flinn, F. B., Axelrod, J. and Brodie, B. B.: The Toxicity of Wax Crayons in Animals, J. Pediat. **33**: 743, 1948.
9. Harrop, G. A. Jr. and Barron, E. S. G.: Studies on Blood Cell Metabolism I. Effect of Methylene Blue and Other Dyes Upon Oxygen Consumption of Mammalian and Avian Erythrocytes, J. Exper. Med. **48**: 207, 1928.
10. Hartmann, A. F., Barnett, H. L. and Perley, A.: Study of Some of the Physiologi-

cal Effects of Sulfanilamide IV. Methemoglobin Formation and its Control, J. Clin. Invest. **17:** 699, 1938.

11. Jones, J. A. and Brieger, H.: Poisoning Due to Ingestion of Wax Crayons, J. Pediat. **30:** 422, 1947.
12. Marriott, W. M., Hartmann, A. F. and Senn, M. J. E.: Observations on the Nature and Treatment of Diarrhea and the Associated Systemic Disturbances, J. Pediat. **3:** 181, 1933.
13. McEllroy, W. S.: A Method for the Determination of Methemoglobin and Hemoglobin in Blood, J. Biol. Chem. **42:** 297, 1920.
14. Murphy, F. J., Zinzi, F. L. and Murphy, L.: Methemoglobinemia, Clin. Proc. Child. Hosp. **3:** 105, 1947.
15. Roe, H. E.: Methemoglobinemia Following Administration of Bismuth Subnitrate: Report of Fatal Case, J. A. M. A. **100:** 352, 1933.
16. Spicer, S. C., Hanna, C. H. and Neal, P. A.: A Note on Methemoglobinemia and Heinz Body Formation in Cats Fed Commercial Crayons, J. Pediat. **33:** 739, 1948.
17. Stadie, W. C.: A Method for the Determination of Methemoglobin in Blood, J. Biol. Chem. **41:** 237, 1920.
18. Wendel, W. B.: Control of Methemoglobinemia with Methylene Blue, J. Clin. Invest. **18:** 179, 1939.
19. Wolley, P. V.: Methemoglobinemia Due to Well Water, J. Pediat. **33:** 506, 1948.

DEPARTMENT OF OBSTETRICS

A Case Report*†

The patient, a 22 year old primigravida, was admitted to the hospital after being in labor for 26 hours. Upon admission, her temperature was 101, pulse 116 and respirations 24 per minute. She complained of extreme exhaustion and appeared to be dehydrated. Pains were about 3 minutes apart, lasting 50 seconds. Upon abdominal palpation, the fetus was found to be presenting as left occiput anterior. The head was deeply engaged in the pelvis. The uterus was closely applied to the fetus, and the patient stated that her membranes had been ruptured for 16 hours with a free discharge of amniotic fluid. The estimated size of the baby was 3200 grams (about 7 lbs.) and no abnormalities of the head or body could be distinguished. The fetal heart could not be heard. A rectal examination showed the cervix to be completely dilated, with the head firmly wedged in the pelvis. A marked caput succedaneum was present and this extended to 2 cms. below the spines, however it seemed quite evident that the biparietal diameter was above this point. There was some crepitation of the skull bones, a further evidence of intrauterine fetal death. It was further noted that there was a moderately profuse, foul smelling vaginal discharge.

The referring physician reported that the patient had had a normal pregnancy. Labor began near the expected date and was of good character from the onset. The head was "dipping" when pains began and descended to its present station after about 10 hours of labor; the cervix dilated normally and could no longer be felt after 14 hours. Progress of labor ceased after this time although the pains remained strong, regular and frequent. The fetal heart beat disappeared some 4 hours prior to admission.

DISCUSSION

The treatment at this time is no doubt quite apparent and consists of sufficient sedation to produce relief from pain, fluids and blood to combat exhaustion and dehydration, and a craniotomy on the dead baby. This was done, and with the aid of antibiotics, the patient made a moderately uneventful recovery. However, there had been a fetal loss, death very evidently occurring as a result of a prolonged difficult labor. What could have been done to prevent this? Two routine steps in the prenatal examination of this patient had been omitted. When it is planned to deliver a primigravida at home, these two steps are no longer merely routine, they are obligatory. The first of these, pelvic estimation, is the function of the attending physician, and is quite simple. All that is required is a careful pelvic examination in which the size and shape of the pelvis can be estimated with a fair degree of accuracy. In addition to this, and especially if the patient is a primigravida and home delivery is contemplated, roentgen pelvimetry should be done. If the findings are at all questionable, the patient and the films should be referred to an experienced obstetrician for evaluation. It is admitted that

---

* From the Department of Obstetrics, School of Medicine, University of Maryland, Baltimore, Maryland.

† Received for publication May 16, 1949.

roentgen pelvimetry adds appreciably in expense to the patient, but certainly it is not too great a price to pay for the life of the baby.

In the case cited above, roentgen pelvimetry was done after delivery and a markedly contracted pelvis was demonstrated. Had this procedure been carried out during pregnancy, the patient would have been changed from home to hospital delivery, would have had an abdominal delivery and, in all likelihood, would have returned home with a living healthy child.

PROCEEDINGS

of the
University of Maryland Biological Society

A program meeting of the University of Maryland Biological Society was held on Wednesday, February 23, 1949. The speaker was Dr. Deitrich C. Smith, who presented a paper entitled: *The Concentration of Radioactive Iodine* (*I^{131}*) *by the Thyroid Gland of the Parrot Fish.* An abstract of this paper follows:

THE CONCENTRATION OF RADIO-ACTIVE IODINE (I^{131}) BY THE THYROID GLAND OF THE PARROT FISH

DIETRICH C. SMITH AND SAMUEL A. MATTHEWS*

In an effort to enlarge the scanty knowledge of the function of the thyroid gland in fishes, studies were made on how rapidly the thyroid gland of the parrot fish takes up iodine and how long it is retained. Ninety-two animals of 3 species of parrot fish (Sparisoma sp., Pseudoscarus sp., and Scarus sp.) were injected with 5 mc. each of I^{131} and killed at intervals ranging from 15 minutes to 14 days after the injection. The thyroid gland was removed entirely, together with the auricle and a piece of gill. The concentration of iodine in all tissues was determined immediately with a Geiger counter. It was found that the average iodine concentration in all 3 species was one-third of the maximum within 15 minutes after injection, the maximum concentration being attained within 12 to 48 hours after injection. The concentration then gradually falls, but iodine is still detectable 14 days after injection. The concentration of iodine in the auricle was at no time greater than one-seventh of that seen in the thyroid gland; for the most part the ratios were even lower. Furthermore, iodine could be detected within the auricle for only about 5 hours after injection, after which time it entirely disappeared. Thus there can be but little doubt that the thyroid gland concentrates iodine in a manner similar to that seen in mammals. During the first 3 hours after injection the gill concentrated iodine only slightly more rapidly than the auricle, but after this period there was always decidedly more iodine in the gill than in the auricle. The gill retained detectable amounts of iodine for as long as 72 hours after injection. This strongly suggests that active thyroid tissue is present in the gill of these fishes and substantiates what has been suggested by histologic work on other forms by other investigators.

To determine how the concentration of iodine in the gland may be modified by an antithyroid drug, 11 animals were injected daily with 20 cc. of a solution of propyl-thiouracil saturated at pH 7.5 to 8.5. After 7 to 12 days of this treatment, 5 mc. of I^{131} were injected and the animals were killed 24 hours later. Control animals were injected daily for the same period with 20 cc. of distilled water. Geiger counter determinations showed that the thyroids of the p-thiouracil treated animals contained 49 per cent less I^{131} than those of the controls. It is noteworthy also that the former showed an increase of 35 per cent in

---

* Department of Physiology, School of Medicine, University of Maryland, Baltimore. Maryland and Department of Biology, Williams College, Williamstown, Massachusetts,

weight (96 mgm./kgm. as compared with 71 mgm./kgm. for controls). This suggests that the pituitary gland in these fishes contains a thyrotrophic principle.

A program meeting of the University of Maryland Biological Society was held on Wednesday, March 23, 1949. The speaker was Dr. Irving Rothchild, who presented a paper entitled: *Studies on the Ovulation of the Avian Ovarian Follicle.* An abstract of this paper follows:

STUDIES ON THE OVULATION OF THE AVIAN OVARIAN FOLLICLE*

Irving Rothchild

Published studies of Rothchild and Fraps (Endocrinology 44, 134, and 141, 1949) have shown (1) that release of ovulating hormone from the pituitary of the domestic hen apparently occurs about 4 to 6 hours before each ovulation in the clutch, and (2) that progesterone induces a release of ovulating hormone from the hen's pituitary. The apparent interval of 4 to 6 hours between release and ovulation is common to both naturally-induced and progesterone-induced ovulations, and is based upon the finding that hypophysectomy at intervals of more than 6 hours from expected ovulation is followed by a very low incidence of ovulations, while hypophysectomy at intervals of less than 4 hours from expected ovulation is followed by a very high incidence of ovulations. However, other data imply a strong possibility that the actual stimulus to release of ovulating hormone, and the release itself, may occur at 8 to 9 hours, rather than at 4 to 6 hours before ovulation. These data follow.

The average interval from intravenous injection of progesterone to ovulation is of the order of 9 hours, and from intravenous injection of pituitary material (dried male chicken anterior pituitaries), of the order of 8 hours. Hypophysectomy up to and including 3 hours after intravenous injection of 1.0 mgm. progesterone, which in normal intact birds induces ovulation in over 80 per cent, was followed by an incidence of ovulations always less than that obtained in normal birds, while hypophysectomy at 4 hours after the injection of this dose of progesterone was followed by as high an incidence of ovulations as is obtained in normal birds. When 0.05 mgm. of dried male chicken pituitary was used to induce ovulation, the same incidence of ovulation as is obtained in normal birds (about 75 per cent) followed hypophysectomy at 3 hours after injection, but was always less than this when hypophysectomy was done at shorter intervals following injection. From these data it may be concluded that the bird's own pituitary is required in order for ovulation to occur, for a period of up to 3 hours following injection of pituitary material (which acts directly on the ovarian follicle), and for 4 hours following injection of progesterone (which acts by inducing a release of hormone from the bird's own pituitary). This, taken together with the fact that the over-all interval from injection of progesterone to ovulation is of the order of 9 hours, may mean that release of hormone occurs within 1 hour after the intravenous injection of progesterone, and that following this release, the continued secretion of another pituitary factor for a period of up to 3 hours is required for the maintenance of follicular reactivity to the ovulating hormone. Following this period (which would be equivalent to the time when hypophysectomy does not interfere with ovulation however induced, i.e., naturally, by pituitary injection, or by progesterone injection) ovulation occurs in about 4 to 6 hours.

---

* Department of Physiology, School of Medicine, University of Maryland, Baltimore, Maryland.

ALUMNI ASSOCIATION SECTION

OFFICERS

William H. Triplett, M.D., *President*

Vice-Presidents

Page Jett, M.D.
John H. Hornbaker, M.D.
John Mace, M.D.

Thurston R. Adams, M.D., *Secretary*
Simon Brager, M.D., *Assistant Secretary*
Minette E. Scott, *Executive Secretary*
Charles Reid Edwards, M.D., *Treasurer*

Board of Directors

Albert E. Goldstein, M.D., *Chairman*
William H. Triplett, M.D.
Charles Reid Edwards, M.D.
Thurston R. Adams, M.D.
Simon Brager, M.D.
Louis A. M. Krause, M.D.
Emil Novak, M.D.
Austin Wood, M.D.
Wetherbee Fort, M.D.

Hospital Council

Alfred T. Gundry, M.D.
George F. Sargent, M.D.

Nominating Committee

W. Raymond McKenzie, M.D., *Chairman*
Frank Ogden, M.D.
Robert F. Healy, M.D.
Ernest I. Cornbrooks, M.D.
Frank K. Morris, M.D.

Library Committee

Milton S. Sacks, M.D.

Representatives to General Alumni Board

John A. Wagner, M.D.
Thurston R. Adams, M.D.
William H. Triplett, M.D.

Editors

John A. Wagner, M.D.
C. Gardner Warner, M.D.

Alumni Council

Louis H. Douglass, M.D.
Lewis P. Gundry, M.D.

The names listed above are officers for the term beginning July 1, 1949 and ending June 30, 1950.

OBITUARY

DR. HOWARD J. MALDEIS

Howard J. Maldeis, M.D., Associate Professor of Legal Medicine at the University of Maryland and Chief Medical Examiner for Maryland, died on January 15, 1949, aged 69, after a brief illness. He was born in Baltimore on September 20, 1879, and after receiving his preliminary education at the Baltimore City College, entered the University of Maryland School of Medicine from which he was graduated in 1903. He was then appointed Assistant in Histology and Embyology and in 1912 was promoted to Associate Professor. In 1913 he was appointed Associate in Pathology and Bacteriology and with the establishment of the Department of Clinical Pathology became Associate Professor under the late William Royal Stokes.

At this time Dr. Maldeis became interested in the legal aspects of pathology and was appointed Baltimore City Post-Mortem Physician, holding this post until the creation of the Medical Examiner's System in 1930. During this period he became Associate Professor of Medical Jurisprudence at the University Medical School.

Largely through his efforts, the old coroner system of the State of Maryland was abolished, and with the repeal of these obsolete laws by the Legislature and the establishment of the Medical Examiner's System, he became the first Chief Medical Examiner, holding this post until his death.

The many years spent as Post-Mortem Physician and then as Chief Medical Examiner afforded opportunities for many original contributions to the literature relating to medical-legal problems. His advice and counsel was always cheerfully given and was valued by both the legal and medical professions. As a pathologist he was profoundly interested in the practice of his specialty and was instrumental in organizing both the Pathology Section of the Baltimore City Medical Association and the Maryland Pathologists Association. He was a member of the Medical and Chirurgical Faculty of Maryland, a Fellow of the American Medical Association and a member of the Southern Medical Association. He was elected a Founding Fellow of the College of American Pathologists and was certified by the American Board of Pathology.

DR. HOWARD J. MALDEIS

He was a member of the Grace North Baltimore Methodist Church. His fraternal affiliations included Warren Lodge #51, A.F. & A.M., Scottish Rite, Boumi Temple, A.O.N.M.S., and the Delta Kappa Psi Fraternity. He is survived by his wife, the former Ruby Crooks; a son, Howard J., Jr., and a daughter, Mrs. Clifford C. Bruck, all of Baltimore.

A fitting memorial appeared as an editorial in the *Baltimore Sun* which might well serve as a concise summary of his important contributions to medicine and to his community as well as a tribute which any physician might well be honored to receive.

> "The State and local governments would be far better if more of their services were dispensed under the direction of men like Dr. Howard J. Maldeis. Public service was a career to him. Dr. Maldeis was an expert in his field and he gave much of his time to the demands of the city and State. He served without ostentation and without an eye on another bigger and higher paying job on the public payroll.
>
> Dr. Maldeis will also be remembered for the part he played 10 years ago in the movement which brought an end to the old coroner system, with its hit-and-miss procedure, and the introduction of the modern Department of Post-Mortem Examiners with its staff of qualified specialists. As chief medical examiner, Dr. Maldeis held the responsibility to see that the department got off to a sound start. He was successful in this and the department continued to function as expected under his leadership.
>
> Through the death of Dr. Maldeis the city and State lose a public servant who rendered good public service."

J. W.

OBITUARIES

Berkheimer, George Calvin, Windber, Pa.; P & S, class of 1905; aged 77; died, March 4, 1949.

Cahoon, Joseph Henry, Middletown, Del.; class of 1903; aged 83; died, December 12, 1949, of arteriosclerosis.

Cawley, William Dennis, Elkton, Md.; class of 1902; aged 76; served during World War I; died, January 1, 1949, of acute coronary disease.

Chapman, Irving Lee, South Norfolk, Va.; B.M.C., class of 1904; aged 69; died, January 20, 1949, of cerebral thrombosis.

Cooper, Ninian J., Kramer, Pa.; P & S, class of 1894; aged 83; died, March 7, 1949, of arteriosclerosis.

Councill, Wilford Anderson Hall, Baltimore, Md.; class of 1914; aged 58; died, March 26, 1949.

Crofton, George Henry, Washington, D. C.; P & S, class of 1914; aged 60; died, January 8, 1940, of coronary occlusion.

Cunningham, Patrick Vincent, Providence, R. I.; B.M.C., class of 1903; aged 75; died, January 22, 1949, of chronic nephritis.

Egan, John Joseph, Waterbury, Conn.; class of 1907; aged 65; served during World War II; died, February 1, 1949, of pulmonary tuberculosis.

Fultz, Benno Hugh, San Antonio, Tex.; P & S, class of 1901; aged 74; died, February 15, 1949, of arteriosclerosis.

Graver, Joseph Goethe, Cleveland, O.; P & S, class of 1907; aged 68; died, February 9, 1949, of coronary occlusion.

Hundley, Frank S., Baltimore, Md.; class of 1916; aged 57; served during World War I; died, January 25, 1949, of gastric hemorrhage and esophageal varices.

Jarrell, Dennis B., Beckley, W. Va.; P & S, class of 1915; aged 62; served during World War I; died, March 30, 1949, of primary spinal atrophy.

Kight, Rufus S., Norfolk, Va.; class of 1900; aged 72; died, February 12, 1949, of heart disease.

Levine, Leonard Warren, Ellington, Conn.; class of 1937; aged 35; died, January 2, 1949, of coronary thrombosis.

Nestor, Michael J., Providence, R. I.; class of 1905; aged 72; died, January 9, 1949, of cerebral hemorrhage.

Pierson, Theodore A., Hopewell, N. J.; P & S, class of 1894; aged 78; died, December 24, 1949, of chronic nephritis.

Renz, Oscar William, Erie, Pa.; P & S, class of 1915; aged 56; died, February 3, 1949, of hypertensive cardiovascular disease.

Salzberg, Abraham H., Brooklyn, N. Y., class of 1922; aged 51; died, February 4, 1949, of coronary thrombosis.

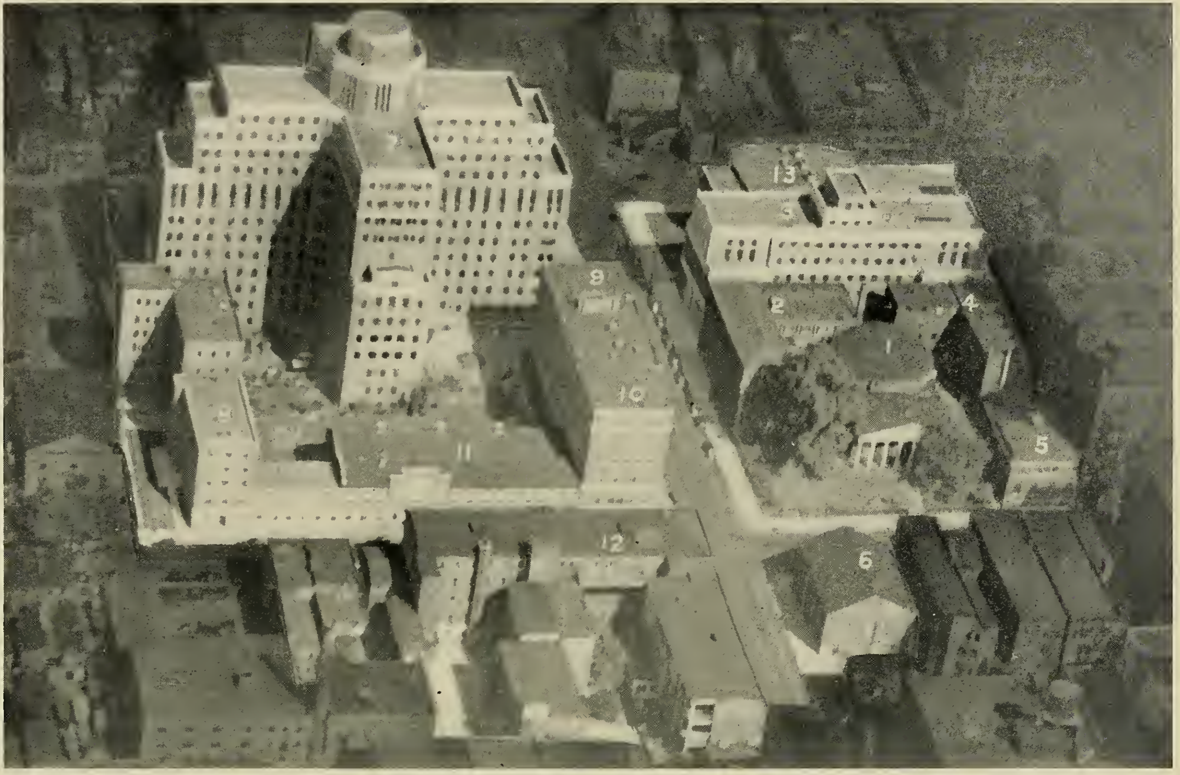
Smoot, James Edward, Concord, N. C.; B.M.C., class of 1893; aged 81; died, January 17, 1949, of coronary thrombosis.

Steele, Harry George, Bluefield, W. Va.; P & S, class of 1903; aged 72; died, January 29, 1949, of heart disease.

Warwick, James E., Valentine, Nebraska; P & S, class of 1888; aged 84; died, January 17, 1949, of nephritis.

Yaeger, Leslie A., Trenton, N. J.; P & S, class of 1921; aged 56; served during World Wars I and II; died, February 28, 1949, of hepatitis.

pp. 65–112 follow announcement and
catalogue no.



Baltimore Schools—University of Maryland

1. Original Medical Building
2. Laboratory Building, Medicine
3. Bressler Building, Medicine
4. Gray Laboratory, Student's Lounge, Medicine
5. Administration Building, College of Education, Baltimore Division
6. Medical Library
7. University Hospital
8. Nurses' Home, Medicine
9. School of Pharmacy
10. School of Dentistry
11. Dental Clinic
12. Out-Patient Clinics, Medicine
13. School of Law

BULLETIN

OF THE

SCHOOL *of* MEDICINE

UNIVERSITY OF MARYLAND

v. 34, no. 2

SEPTEMBER, 1949

1807 · 1856 · 1920

Announcements for

The One Hundred Forty-Fourth Academic Session
1949–1950

Catalogue of
The One Hundred Forty-Third Academic Session
1948–1949

CONTENTS

PAGE
Calendar July 1949–June 1951........ 4
Calendar of events for 1949–1950..... 5
Calendar, Postgraduate.............. 86
Organization........................ 7
  Board of Regents.................. 7
  Faculty of Medicine............... 9
Fellows............................. 19
University Hospital................. 20
  Executive Committee............... 20
  Hospital Staff.................... 20
  Resident and Intern Staff......... 22
  Dispensary Staff.................. 24
  Dispensary Report................. 29
Mercy Hospital...................... 29
  Hospital Staff.................... 30
  Resident and Intern Staff......... 34
  Dispensary Staff.................. 34
  Dispensary Report................. 37
Baltimore City Hospitals—Staff....... 37
Kernan Hospital—Staff............... 39
The School of Medicine.............. 41
  History........................... 41
  Buildings and Facilities.......... 41
Requirements for Admission.......... 46
  Application....................... 46
  Minimum Requirements.............. 46
  Combined Course in Arts and Sciences, and Medicine............. 47
State Medical Student Qualifying Certificates.......................... 48
Definition of Residence Status........ 48
Current Fees........................ 49
Rules for Payment of Fees............ 49
Penalty for Non-Payment of Fees..... 49
Reexamination Fee................... 50
Student Activities and Service Fee.... 50
Student Health Service.............. 50
General Rules....................... 51
Housing............................. 53
Parking............................. 53
Prizes.............................. 54
Scholarships........................ 55
Loan Funds.......................... 57
Organization of the Curriculum....... 58
  Anaesthesiology................... 84
  Art as Applied to Medicine......... 85
  Bacteriology and Immunology...... 60
  Biological Chemistry.............. 61
  Clinical Pathology................ 67
  Dentistry......................... 79

PAGE
  Dermatology and Syphilology...... 71
  Gastro-Enterology................. 68
  Genito-Urinary Surgery............ 76
  Anatomy, Gross, Neuro- Microscopic, and Developmental............ 59
  Gynecology........................ 82
  History of Medicine............... 85
  Hygiene and Public Health......... 71
  Industrial Medicine and Surgery.... 80
  Legal Medicine.................... 71
  Medicine.......................... 63
  Neurological Surgery.............. 78
  Neurology......................... 70
  Obstetrics........................ 81
  Oncology.......................... 78
  Ophthalmology..................... 83
  Orthopaedic Surgery............... 75
  Otology........................... 77
  Pathology......................... 62
  Pediatrics........................ 69
  Pharmacology...................... 61
  Physiology........................ 60
  Plastic Surgery................... 81
  Postgraduate Courses.............. 85
  Proctology........................ 77
  Psychiatry........................ 68
  Rhinology and Laryngology....... 75
  Roentgenology..................... 84
  Speech Training................... 81
  Surgery........................... 72
Schedules of Courses................ 88
Graduates, June 4, 1949............. 93
Internships, Graduates of June 4, 1949.......................... 95
Matriculates, September 16, 1948 to June 4, 1949....................... 96
Post Graduate Students, July 1, 1948 to June 30, 1949...............102
Summary of Students, September 16, 1948 to June 4, 1949.............105
Geographical Distribution of Students, September 16, 1948 to June 4, 1949 105
Medical Alumni Association..........106
Endowment Fund.....................106
University of Maryland School of Nursing........................107
Mercy Hospital School of Nursing.....108
Index of Names......................109

CALENDAR

1949

JULY

S	M	T	W	T	F	S
....	....	....	....	....	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	....	....	....	....	....	....

AUGUST

S	M	T	W	T	F	S
....	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	....	....	....

SEPTEMBER

S	M	T	W	T	F	S
....	....	....	....	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	....

OCTOBER

S	M	T	W	T	F	S
....	....	....	....	....	....	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	....	....	....	....	....

NOVEMBER

S	M	T	W	T	F	S
....	....	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	....	....	....
....	....	....	....	....	....	....

DECEMBER

S	M	T	W	T	F	S
....	....	....	....	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
....	....	....	....	....	....	....

1950

JANUARY

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	....	....	....	....
....	....	....	....	....	....	....

FEBRUARY

S	M	T	W	T	F	S
....	....	....	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	....	....	....	....

MARCH

S	M	T	W	T	F	S
....	....	....	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	....

APRIL

S	M	T	W	T	F	S
....	....	....	....	....	....	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	....	....	....	....	....	....

MAY

S	M	T	W	T	F	S
....	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	....	....	....
....	....	....	....	....	....	....

JUNE

S	M	T	W	T	F	S
....	....	....	....	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	....
....	....	....	....	....	....	....

JULY

S	M	T	W	T	F	S
....	....	....	....	....	....	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	....	....	....	....	....

AUGUST

S	M	T	W	T	F	S
....	....	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	....	....

SEPTEMBER

S	M	T	W	T	F	S
....	....	....	....	....	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

OCTOBER

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	....	....	....	....
....	....	....	....	....	....	....

NOVEMBER

S	M	T	W	T	F	S
....	....	....	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	....	....
....	....	....	....	....	....	....

DECEMBER

S	M	T	W	T	F	S
....	....	....	....	....	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	....	....	....	....	....	....

1951

JANUARY

S	M	T	W	T	F	S
....	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	....	....	....
....	....	....	....	....	....	....

FEBRUARY

S	M	T	W	T	F	S
....	....	....	....	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	....	....	....

MARCH

S	M	T	W	T	F	S
....	....	....	....	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

APRIL

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	....	....	....	....	....
....	....	....	....	....	....	....

MAY

S	M	T	W	T	F	S
....	....	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	....	....
....	....	....	....	....	....	....

JUNE

S	M	T	W	T	F	S
....	....	....	....	....	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
....	....	....	....	....	....	....

CALENDAR

ACADEMIC YEAR—SEPTEMBER 22, 1949 TO JUNE 10, 1950

1949		
September 12, 13, 14		Re-examinations for advancement

FIRST SEMESTER—September 22, 1949 to January 28, 1950

September 20	Tuesday	*Registration, payment of fees, freshmen and sophomores
September 21	Wednesday	*Registration, payment of fees, all other students
September 22	Thursday	Instruction begins at 8.30 A.M.
November 23	Wednesday	Instruction suspended at 5.00 P.M. Thanksgiving Holidays
November 28	Monday	Instruction resumed
December 20	Tuesday	Instruction suspended at 5.00 P.M. Christmas Holidays
1950		
January 3	Tuesday	Instruction resumed
January 23	Monday	Midyear examinations
to		*Payment of fees for second semester
January 28	Saturday	First semester completed 2.00 P.M.

SECOND SEMESTER—January 30 to June 10, 1950

January 30	Monday	Instruction begins at 8.30 A.M.
February 21	Tuesday	Instruction suspended at 5.00 P.M.
February 22	Wednesday	Holiday—Washington's Birthday
February 23	Thursday	Instruction resumed
April 5	Wednesday	Instruction suspended at 5.00 P.M. Easter Holidays
April 13	Thursday	Instruction resumed
May 22	Monday	Junior examinations begin
May 29	Monday	Junior examinations continue Sophomore and Freshmen examinations begin
May 30	Tuesday	Holiday—Memorial Day
June 3	Saturday	Announcement of graduates
June 10	Saturday	Commencement Second semester completed at 12.30 P.M.

PARTIAL CALENDAR FOR 1950–1951

1950		
September 11, 12, 13		Re-examinations for advancement
September 19	Tuesday	*Registration, payment of fees, freshmen and sophomores
September 19	Tuesday	*Registration, payment of fees, freshmen and sophomores
September 20	Wednesday	*Registration, payment of fees all other students
September 21	Thursday	Instruction begins at 8.30 A.M.

---

* A student who fails to register prior to or within the day or days specified will be called upon to pay a late registration fee of five dollars ($5.00). The last day of registration with fee added to regular charges is Saturday of the week in which registration begins.

The offices of the registrar and comptroller are open daily from 9:00 A.M. to 5:00 P.M., and Saturday from 9:00 A.M. to 12:00 noon.

ORGANIZATION

THE UNIVERSITY OF MARYLAND

Harry Clifton Byrd, B.S., LL.D., D.Sc., *President and Executive Officer*

BOARD OF REGENTS

		Term Expires
William P. Cole, Jr., *Chairman*	Baltimore	1949
Stanford Z. Rothschild, *Secretary*	Baltimore	1952
J. Milton Patterson, *Treasurer*	Baltimore	1953
Peter W. Chichester	Frederick	1951
Edward F. Holter	Middletown	1950
E. Paul Knotts	Denton	1954
Charles P. McCormick	Baltimore	1957
Harry H. Nuttle	Denton	1957
Philip C. Turner	Baltimore	1950
Millard E. Tydings	Washington, D. C.	1951
Mrs. John L. Whitehurst	Baltimore	1956

Members of the Board are appointed by the Governor of the State for terms of nine years each, beginning the first Monday in June.

The President of the University of Maryland is, by law, Executive Officer of the Board.

A regular meeting of the Board is held the third Friday in each month, except during the months of July and August.

Each school has its own Faculty Council, composed of the Dean and members of its faculty; each Faculty Council controls the internal affairs of the group it represents.

The University has the following educational organizations:

At Baltimore

The School of Dentistry
The School of Law
The School of Medicine
The School of Nursing
The School of Pharmacy
The College of Education (Baltimore Division)

At College Park

The College of Agricultural
The College of Arts and Sciences
The College of Business and Public Administration
The College of Commerce
The College of Education
The College of Engineering
The College of Home Economics
The Graduate School
The Department of Military Science and Tactics
The Department of Physical Education and Recreation
The Summer School

ADMINISTRATIVE OFFICERS

School of Medicine

H. C. Byrd, B.S., L.L.D., D.Sc.	*President of the University*
Maurice C. Pincoffs, B.S., M.D.,	*Assistant to the President*
H. Boyd Wylie, M.D.	*Dean*
O. G. Harne	*Assistant to the Dean*
Alma H. Preinkert, M.A.	*Registrar*
Edgar F. Long, Ph.D.	*Director of Admissions*

FACULTY OF MEDICINE

EMERITI

J. Frank Crouch, M.D.	Professor of Clinical Ophthalmology and Otology, Emeritus
Harry Friedenwald, A.B., M.D., D.H.L., D.Sc.	Professor of Ophthalmology, Emeritus
J. M. H. Rowland, M.D., D.Sc., LL.D.	Professor of Obstetrics, Emeritus; Dean, Emeritus
J. Dawson Reeder, M.D.	Professor of Proctology, Emeritus[5]
Henry J. Walton, M.D.	Professor of Roentgenology, Emeritus
Page Edmunds, M.D.	Professor of Traumatic Surgery, Emeritus
Ruth Lee Briscoe	Librarian, Emeritus
Albertus Cotton, M.A., M.D.	Professor of Orthopaedic Surgery, and Roentgenology, Emeritus
Joseph E. Gichner, M.D.	Professor of Clinical Medicine and Physical Therapeutics, Emeritus[5a]
Harvey G. Beck, M.D., D.Sc.	Professor of Clinical Medicine, Emeritus
Irving J. Spear, M.D.	Professor of Neurology, Emeritus
Carl L. Davis, M.D.	Professor of Anatomy, Emeritus
Arthur M. Shipley, M.D., D.Sc.	Professor of Surgery, Emeritus
Clyde A. Clapp, M.D.	Professor of Ophthalmology, Emeritus
Andrew C. Gillis, M.A., M.D., LL.D.	Professor of Neurology, Emeritus

FACULTY BOARD

Dean H. Boyd Wylie, *Chairman*
O. G. Harne, *Secretary*

William R. Amberson
Franklin B. Anderson
James G. Arnold, Jr.
Walter A. Baetjer
Charles Bagley, Jr.
J. Edmund Bradley
Otto C. Brantigan
Howard M. Bubert
T. Nelson Carey
C. Jelleff Carr
Thomas R. Chambers
Carl Dame Clarke
Paul W. Clough
Richard G. Coblentz
Beverley C. Compton
Charles N. Davidson
Louis H. Douglass
C. Reid Edwards
Monte Edwards
Frederick P. Ferguson
Frank H. J. Figge
Jacob E. Finesinger
A. H. Finkelstein
Leon Freedom
Edgar B. Friedenwald
Thomas K. Galvin
Moses Gellman
Frank W. Hachtel
Edward J. Herbst
Cyrus F. Horine
J. Mason Hundley, Jr.
Elliott H. Hutchins
Edward S. Johnson
F. L. Jennings
C. Loring Joslin
Walter L. Kilby
Edward A. Kitlowski
Vernon E. Krahl
John C. Krantz, Jr.
Louis A. M. Krause
Kenneth D. Legge
R. W. Locher
Edward A. Looper
William S. Love, Jr.
John F. Lutz
Stanley H. Macht
Charles W. Maxson
Zachariah Morgan
Theodore H. Morrison
Alfred T. Nelson
Emil Novak
Thomas R. O'Rourk
C. W. Peake
D. J. Pessagno
H. R. Peters
Maurice C. Pincoffs
J. Morris Reese
Charles A. Reifschneider
Dexter L. Reimann
Harry M. Robinson, Sr.
Harry L. Rogers

---

[5] Died Nov. 18, 1948.

[5a] Died March 8, 1949.

Milton S. Sacks
Emil G. Schmidt
Andrew G. Smith
Dietrich C. Smith
R. Dale Smith
William H. Smith
Hugh R. Spencer
Thomas P. Sprunt
Edward Steers
W. Houston Toulson
Eduard Uhlenhuth
Henry F. Ullrich
Allen F. Voshell
John A. Wagner
Grant E. Ward
C. Gardner Warner
Huntington Williams
Walter D. Wise
Theodore E. Woodward
Thomas C. Wolff
Robert B. Wright
George H. Yeager
Waitman F. Zinn

EXECUTIVE COMMITTEE OF THE FACULTY

Dean H. Boyd Wylie, *Chairman*
O. G. Harne, *Secretary*

J. Edmund Bradley
T. Nelson Carey
Louis H. Douglass
Charles Reid Edwards
Jacob E. Finesinger
Frank W. Hachtel
J. Mason Hundley, Jr.
Emil G. Schmidt
Hugh R. Spencer

FACULTY OF MEDICINE

PROFESSORS

Myron S. Aisenberg, D.D.S., Professor of Pathology, School of Dentistry.
William R. Amberson, Ph.D., Professor of Physiology, and Head of the Department.
Charles Bagley, Jr., M.A., M.D., Professor of Neurological Surgery.
Joseph C. Biddix, Jr., D.D.S., Professor of Oral Diagnosis, School of Dentistry.[2]
J. Edmund Bradley, M.D., Professor of Pediatrics, and Head of the Department.[2]
Otto C. Brantigan, B.S., M.D., Professor of Surgical Anatomy, and Professor of Clinical Surgery.
T. Nelson Carey, M.D., Professor of Clinical Medicine and Chairman of the Department of Medicine.
Ross McC. Chapman, M.D., Professor of Psychiatry.[5]
Richard G. Coblentz, M.A., M.D., Professor of Clinical Surgery.
Edward C. Dobbs, D.D.S., Professor of Pharmacology, School of Dentistry.[2]
Brice M. Dorsey, D.D.S., Professor of Oral Surgery, School of Dentistry.
Louis H. Douglass, M.D., Professor of Obstetrics, and Head of the Department.
Charles Reid Edwards, M.D., Professor of Surgery, and Acting Head of the Department.
Monte Edwards, M.D., Clinical Professor of Surgery and Professor of Proctology.

It is to be noted that for convenience of reference the names of the members of the Faculty are listed in the forepart of this catalogue in alphabetical order. The names are listed in order of seniority under each preclinical and clinical department of the school on subsequent pages.

On the lists of the Faculty of Medicine and Fellows and the Hospital and Dispensary staffs are given the names and positions assigned during the period July 1, 1948 to June 30, 1949 unless otherwise indicated. Changes are noted as follows:

[1] Appointments effective July 1, 1949.
[2] Promotion effective July 1, 1949.
[3] Resigned.
[4] Retired.
[5] Died Sept. 24, 1948.
[6] On leave.

Ray Ehrensberger, Ph.D., Professor of Speech, College of Arts and Sciences.[1]
Frank H. J. Figge, Ph.D., Professor of Anatomy.[6]
Jacob E. Finesinger, M.D., Professor of Psychiatry, and Head of the Department.[1b]
H. K. Fleck, M.D., Clinical Professor of Ophthalmology.[4]
Edgar B. Friedenwald, M.D., Professor of Clinical Pediatrics.
Thomas K. Galvin, M.D., Clinical Professor of Gynecology.
Grason W. Gaver, D.D.S., Professor of Dental Prosthetics, School of Dentistry.
Andrew C. Gillis, M.A., M.D., LL.D., Professor of Neurology.[4a]
Frank W. Hachtel, M.D., Professor of Bacteriology, and Head of the Department.
Harry C. Hull, M.D., Professor of Clinical Surgery.
J. Mason Hundley, Jr., M.A., M.D., Professor of Gynecology, and Head of the Department.
Elliott H. Hutchins, M.A., M.D., Professor of Surgery.
F. L. Jennings, M.D., Professor of Clinical Surgery.
C. Loring Joslin, M.D., Professor of Pediatrics.
Walter L. Kilby, M.D., Professor of Roentgenology, and Head of the Department.
Edward A. Kitlowski, A.B., M.D., Clinical Professor of Plastic Surgery.
John C. Krantz, Jr., Ph.D., D.Sc., Professor of Pharmocology, and Head of the Department.
Louis A. M. Krause, M.D., Professor of Clinical Medicine.
Kenneth D. Legge, M.D., Professor of Clinical Genito-Urinary Surgery.
G. Carroll Lockard, M.D., Professor of Clinical Medicine.[5]
Edward A. Looper, M.D., D.Oph., Professor of Rhinology and Laryngology.
Theodore H. Morrison, M.D., Clinical Professor of Gastro-Enterology.
Ernest B. Nuttall, D.D.S., Professor of Crown and Bridge, School of Dentistry.
Thomas R. O'Rourk, M.D., Clinical Professor of Otology, Associate Professor of Rhinology and Laryngology.
D. J. Pessagno, A.B., M.D., Professor of Clinical Surgery.
H. Raymond Peters, A.B., M.D., Professor of Clinical Medicine
Maurice C. Pincoffs, B.S., M.D., Professor of Medicine, and Head of the Department.
Kyrle W. Preis, D.D.S., Professor of Orthodontics, School of Dentistry.[1]
Kenneth V. Randolph, D.D.S., Professor of Operative Dentistry, School of Dentistry.
Charles A. Reifschneider, M.D., Clinical Professor of Traumatic Surgery.
Harry L. Rogers, M.D., Clinical Professor of Orthopaedic Surgery.
Harry M. Robinson, Sr., M.D., Professor of Dermatology.
Emil G. Schmidt, Ph.D., LL.B., Professor of Biological Chemistry, and Head of the Department.
Dietrich Conrad Smith, Ph.D., Professor of Physiology.[2]
Hugh R. Spencer, M.D., Professor of Pathology, and Head of the Department.
Thomas P. Sprunt, A.B., M.D., Professor of Clinical Medicine.
W. Houston Toulson, M.Sc., M.D., Professor of Genito-Urinary Surgery.
Ralph P. Truitt, M.D., Professor of Clinical Psychiatry, and[1a] Chairman of the Department.[3]
Eduard Uhlenhuth, Ph.D., Professor of Anatomy, and Head of the Department.

[1a] Appointment effective Oct. 21, 1948.
[1b] Appointment effective May 10, 1949.
[1c] Appointment effective Sept. 1, 1949.
[3] Resignation effective July 1, 1949.
[4] Retired Oct. 2, 1948.
[5] Died August 7, 1949.
[6] On leave (part time) Feb. 1, to May 31, 1949.

Allen Fiske Voshell, A.B., M.D., Professor of Orthopaedic Surgery.
Huntington Williams, M.D., Dr. P.H., Professor of Hygiene and Public Health.
Walter D. Wise, M.D., Professor of Surgery.
George H. Yeager, B.S., M.D., Professor of Clinical Surgery.
Waitman F. Zinn, M.D., Clinical Professor of Rhinology and Laryngology.

ASSOCIATE PROFESSORS

Franklin B. Anderson, M.D., Associate Professor of Rhinology and Laryngology, and Otology.
Merle Ansberry, Ph.D., Associate Professor of Speech, College of Arts and Sciences.[1]
James G. Arnold, Jr., M.D., Associate Professor of Neurological Surgery.
Walter A. Baetjer, A.B., M.D., Associate Professor of Medicine.
H. M. Bubert, M.D., Associate Professor of Medicine.
C. Jelleff Carr, Ph.D., Associate Professor of Pharmacology.
Thomas R. Chambers, A.B., M.D., Associate Professor of Surgery.
Carl Dame Clarke, Associate Professor of Art as Applied to Medicine.
Paul W. Clough, B.S., M.D., Associate Professor of Medicine.
Charles N. Davidson, M.D., Associate Professor of Roentgenology.
Ross Davies, M.D., Associate Professor of Hygiene and Public Health.
J. S. Eastland, M.D., Associate Professor of Medicine.
A. H. Finkelstein, M.D., Associate Professor of Pediatrics.
Leon Freedom, M.D., Associate Professor of Neurology, and Associate in Pathology.
Moses Gellman, B.S., M.D., Associate Professor of Orthopaedic Surgery.
Lewis P. Gundry, M.D., Associate Professor of Medicine.[2]
O. G. Harne, Associate Professor of Anatomy, and Asst. to the Dean.
Hugh H. Hicks, D.D.S., Associate Professor of Periodontology,[2] School of Dentistry.
Horace Hodes, M.D., Associate Professor of Hygiene and Public Health.
Cyrus F. Horine, M.D., Associate Professor of Surgery.
Albert Jaffe, M.D., Associate Clinical Professor of Pediatrics.
Edward S. Johnson, M.D., Associate Professor of Surgery.
Vernon E. Krahl, B.S., M.S., Ph.D., Associate Professor of Anatomy.
Frederick T. Kyper, M.D., D.Sc., Associate Professor of Rhinology, Laryngology and Bronchoscopy. Instructor in Otology.[2]
R. W. Locher, M.D., Associate Professor of Clinical Surgery.
William S. Love, Jr., A.B., M.D., Associate Professor of Medicine.
Howard J. Maldeis, M.D., Associate Professor of Legal Medicine and Associate in Pathology.[5]
Charles W. Maxson, M.D., Associate Professor of Surgery.
Walter C. Merkel, A.B., M.D., Associate Professor of Pathology.
Samuel Morrison, A.B., M.D., Associate Professor of Medicine[2], Associate Professor of Gastro-enterology.[1]
James W. Nelson, M.D., Associate Professor of Surgery.[2]
H. Whitman Newell, M.D., Associate Professor of Psychiatry.
Emil Novak, A.B., M.D., D.Sc., Associate Professor of Obstetrics.
C. W. Peake, M.D., Associate Professor of Surgery.
J. Morris Reese, M.D., Associate Professor of Obstetrics.
Dexter L. Reimann, B. S., M.D., Associate Professor of Pathology.[1]
Benjamin S. Rich, A.B., M.D., Associate Professor of Rhinology and Laryngology, Associate in Otology.

---

[5] Died January 15, 1949.

Milton S. Sacks, M.D., Associate Professor of Medicine and Head of Clinical Pathology, Associate in Pathology.
Frederick B. Smith, M.D., Associate Clinical Professor of Pediatrics.
R. Dale Smith, Ph. D., Associate Professor of Anatomy.[2]
Edward Steers, Ph.D., Associate Professor of Bacteriology.[1]
Lewis C. Toomey, D.D.S., Associate Professor of Oral Surgery, School of Dentistry.[1]
I. Ridgeway Trimble, M.D., Associate Professor of Surgery.[2]
William H. Smith, M.D., Associate Professor of Clinical Medicine.
Henry F. Ullrich, M.D., D.Sc., Associate Professor of Orthopaedic Surgery.
John A. Wagner, B.S., M.D., Associate Professor of Pathology.[2]
W. Wallace Walker, M.D., Associate Professor of Surgery and Surgical Anatomy.[2]
Grant E. Ward, A.B., M.D., Associate Professor of Surgery and Oral Surgery.
C. Gardner Warner, A.B., M.D., Associate Professor of Pathology.
William H. F. Warthen, A.B., M.D., Associate Professor of Hygiene & Public Health.
Glenn S. Weiland, Ph.D., Associate Professor of Biochemistry.[3]
Thomas C. Wolff, M.D., Associate Professor of Medicine, and Head of Physical Diagnosis.
Theodore E. Woodward, M.D., Associate Professor of Medicine
Robert B. Wright, B.S., M.D., Associate Professor of Pathology.

ASSISTANT PROFESSORS

Thurston R. Adams, M.D., Assistant Professor of Surgery and Proctology.
Donald J. Barnett, M.D., Assistant Professor of Roentgenology.[1]
H. F. Bongardt, M.D., Assistant Professor of Surgery.
Leo Brady, A.B., M.D., Assistant Professor of Gynecology.
Simon H. Brager, M.D., Assistant Professor of Surgery and Proctology.
Beverley C. Compton, A.B., M.D., Assistant Professor of Gynecology.[2]
Ernest I. Cornbrooks, Jr., A.B., M.D., Assistant Professor of Gynecology.[2]
Edward F. Cotter, M.D., Assistant Professor of Medicine, Associate in Neurology.
J. G. N. Cushing, M.D., Assistant Professor of Psychiatry.
William K. Diehl, M.D., Assistant Professor of Gynecology.[2]
Everett S. Diggs, B.S., M.D., Assistant Professor of Gynecology.[2]
John S. Dumler, B.S., M.D., Assistant Professor of Gynecology.[2]
William W. Elgin, M.D., Assistant Professor of Psychiatry.
Francis A. Ellis, A.B., M.D., Assistant Professor of Dermatology.
Maurice Feldman, M.D., Assistant Professor of Gastro-Enterology.
Frederick P. Ferguson, Ph.D., Assistant Professor of Physiology.[1]
Jerome Fineman, M.D., Assistant Professor of Pediatrics.[2]
Wetherbee Fort, M.D., Assistant Professor of Medicine.
Frank J. Geraghty, M.D., Assistant Professor of Medicine.
Francis W. Gillis, M.D., Assistant Professor of Genito-Urinary Surgery.
Samuel S. Glick, M.D., Assistant Professor of Pediatrics.
Harry Goldsmith, M.D., Assistant Professor of Psychiatry.
Albert E. Goldstein, M.D., Assistant Professor of Pathology.
George Govatos, A.B., M.D., Assistant Professor of Surgery.[2]
Edward J. Herbst, Ph.D., Assistant Professor of Biological Chemistry.[1]
John F. Hogan, M.D., Assistant Professor of Genito-Urinary Surgery.[2]
Harry K. Iwamota, Ph.D., Assistant Professor of Pharmacology.
D. Frank Kaltreider, A.B., M.D., Assistant Professor of Obstetrics.[2]
Fayne A. Kayser, M.D., Assistant Professor of Rhinology and Laryngology.

F. Edwin Knowles, Jr., M.D., Assistant Professor of Ophthalmology and Chairman of the Department.[2]
H. Vernon Langeluttig, M.D., Assistant Professor of Medicine.
Philip L. Lerner, M.D., Assistant Professor of Neurology.
Hans W. Loewald, M.D., Assistant Professor of Psychiatry.
John F. Lutz, A.B., M.D., Assistant Professor of Anatomy.
Stanley H. Macht, B.S., M.D., Assistant Professor of Roentgenology.
Howard B. Mays, M.D., Assistant Professor of Genito-Urinary Surgery and Instructor in Pathology.
W. Raymond McKinsey, M.D., Assistant Professor of Rhinology and Laryngology.[2]
Zachariah Morgan, M.D., Assistant Professor of Gastro-Enterology.
Harry M. Murdock, B.S., M.D., Assistant Professor of Psychiatry.
George McLean, M.D., Assistant Professor of Medicine.
Alfred T. Nelson, M.D., Assistant Professor of Anesthesiology, and Chairman of the Department.
M. Alexander Novey, A.B., M.D., Assistant Professor of Obstetrics.[5]
Wilber O. Ramsey, D.D.S., Assistant Professor of Clinical Dental Prosthesis, School of Dentistry.[1]
I. O. Ridgely, M.S., M.D., Assistant Professor of Surgery.
William F. Rienhoff, M.D., Assistant Professor of Surgery.[2]
Harry M. Robinson, Jr., B.S., M.D., Assistant Professor of Dermatology, Associate in Medicine.
Irving Rothchild, Ph.D., Assistant Professor of Physiology.[2c]
John E. Savage, B.S., M.D., Assistant Professor of Obstetrics.
Kathyrn L. Schultz, M.D., Assistant Professor of Psychiatry.[2]
Theodore A. Schwartz, M.D., Assistant Professor of Rhinology and Laryngology.[2]
William M. Seabold, M.D., Assistant Professor of Pediatrics.[2a]
William B. Settle, M.D., Assistant Professor of Surgical Anatomy[2] and Associate in Surgery.[1]
Isadore A. Siegel, A.B., M.D., Assistant Professor of Obstetrics.
Andrew G. Smith, Ph.D., Assistant Professor of Bacteriology.[2b]
Edward P. Smith, M.D., Ph.G., Assistant Professor of Gynecology.
Sol Smith, M.D., Assistant Professor of Medicine.
Philip S. Wagner, M.D., Assistant Professor of Psychiatry.
Gibson J. Wells, M.D., Assistant Professor of Pediatrics.[2]
Milton J. Wilder, M.D., Assistant Professor of Orthopedic Surgery.[2]
Asa D. Young, M.D., Assistant Professor of Roentgenology.

ASSOCIATES

Conrad B. Acton, M.D., Associate in Medicine.
Marie A. Andersch, Ph.D., Associate in Medicine.
Margaret B. Ballard, M.D., Associate in Obstetrics.
Eugene S. Bereston, A.B., M.D., Associate in Dermatology.
Kenneth B. Boyd, A.B., M.D., Associate in Gynecology and Assistant in Obstetrics.

[1a] Appointment effective November 1, 1948 to June 30, 1949.
[2a] Effective Oct. 15, 1948.
[2b] Appointment effective Feb. 1, 1950.
[2c] Appointment effective Nov. 1, 1948 to June 30, 1949.
[5] Died July 16, 1949.

V. V. Brunst, Sc.D., Research Associate in Anatomy.[1a]
Harold H. Burns, M.D., Associate in Surgery.[2]
M. Paul Byerly, M.D., Associate in Medicine.
Osborne D. Christensen, M.D., Associate in Obstetrics.[1]
W. A. H. Councill, M.D., Associate in Genito-Urinary Surgery.[5]
Kathryn Dice, Ed.D., Associate in Clinical Psychology.[1b]
Francis G. Dickey, M.D., Associate in Medicine.
D. McClelland Dixon, M.D., Associate in Obstetrics and Instructor in Pathology.
J. J. Erwin, M.D., Associate in Gynecology.
L. K. Fargo, M.D., Associate in Genito-Urinary Surgery.
William L. Fearing, M.D., Associate in Neurology.
Samuel L. Fox, M.D., Associate in Rhinology, Laryngology and Otology.
Irving Freeman, M.D., Associate in Medicine.
William L. Garlick, A.B., M.D., Associate in Surgery.[2]
Raymond F. Helfrich, A.B., M.D., Associate in Surgery.
W. Grafton Herspberger, M.D., Associate in Medicine.
John T. Hibbitts, M.D., Associate in Gynecology.
Henry W. D. Holljes, M.D., Associate in Medicine.
Z. Vance Hooper, M.D., Associate in Gastro-Enterology.
Clewell Howell, B.S., M.D., Associate in Pediatrics.
Benjamin H. Isaacs, A.B., M.D., Associate in Rhinology and Laryngology.[2]
Meyer W. Jacobson, M.D., Associate in Medicine.
Joseph V. Jerardi, B.S., M.D., Associate in Surgery.
Hugh J. Jewett, M.D., Associate in Genito-Urinary Surgery.[2]
Arthur Karfgin, B.S., M.D., Associate in Medicine.
Joseph I. Kemler, M.D., Associate in Ophthalmology.
Elizabeth LaForge, M.S.S., Associate in Psychiatric Social Work.[1b]
C. Edward Leach, M.D., Associate in Medicine.
Samuel Legum, M.D., Associate in Medicine.
Kurt Levy, M.D., Associate in Medicine.[2]
Ephraim T. Lisansky, M.D., Associate in Medicine.
G. Bowers Mansdorfer, B.S., M.D., Associate in Pediatrics.
Henry J. L. Marriott, M.A., B.M., Associate in Medicine.[2]
I. H. Maseritz, M.D., Associate in Orthopaedic Surgery.
Karl F. Mech, B.S., M.D., Associate in Anatomy[2] and Instructor in Pathology.
Lyle J. Millan, M.D., Associate in Genito-Urinary Surgery.
Frank K. Morris, A.B., M.D., Associate in Gynecology.
Hugh B. McNally, B.S., M.D., Associate in Obstetrics.
S. Edwin Muller, M.D., Associate in Medicine.
Herbert E. Reifschneider, A.B., M.D., Associate in Surgery and Surgical Anatomy.[2]
Robert A. Reiter, M.D., Associate in Medicine.
Samuel T. R. Revell, M.D., Associate in Medicine.
Henry L. Rigdon, M.D., Associate in Surgery and Surgical Anatomy.
R. C. V. Robinson, M.D., Associate in Dermatology.
Sidney Scherlis, M.D., Associate in Medicine.[1c]

[1a] Appointment effective Sept. 1, 1948.
[1b] Appointment effective Jan. 1, 1950.
[1c] Appointment effective Nov. 1, 1948.
[5] Died March 26, 1949.

William M. Seabold, A.B., M.D., Associate in Pediatrics.
Lawrence M. Serra, M.D., Associate in Medicine.
A. Albert Shapiro, B.S., M.D., Associate in Dermatology.
Arthur G. Siwinski, A.B., M.D., Associate in Surgery.
Benedict Skitarelic, A.B., M.D., Associate in Pathology.
Harry A. Teitlebaum, B.S., M.D., Ph.D., Associate in Neurology.
Isadore Tuerk, M.D., Associate in Psychiatry.
William K. Waller, M.D., Associate in Medicine.
Austin H. Wood, M.D., Associate in Genito-Urinary Surgery.
Israel Zeligman, A.B., M.D., Associate in Dermatology.

LECTURERS

Jonas Friedenwald, M.A., M.D., Lecturer in Ophthalmic Pathology.
Amedeo S. Marrazzi, M.D., Lecturer in Pharmacology.[1a]
Joseph M. Miller, M.D., Lecturer in Surgery.
William H. Summerson, Ph.D., Lecturer in Biological Chemistry.

INSTRUCTORS

A. Russell Anderson, M.D., Instructor in Psychiatry.
Leon Ashman, M.D., Instructor in Medicine.
Charles P. Barnett, A.B., M.D., Instructor in Pathology.[1]
Edmund G. Beacham, M.D., Instructor in Medicine.
Harry McB. Beck, M.D., Instructor in Gynecology.[2]
Robert Z. Berry, A.B., M.D., Instructor in Rhinology and Laryngology.[2]
John Z. Bowers, B.S., M.D., Instructor in Medicine.
Harry C. Bowie, B.S., M.D., Instructor in Surgery and Surgical Anatomy.
Thomas S. Bowyer, A.B., M.D., Instructor in Gynecology and Assistant in Obstetrics.
George H. Brouillet, B.S., M.D., Instructor in Surgery.
Ann Virginia Brown, A.B., Instructor in Biological Chemistry.
J. E. Brumback, Jr., B.S., M.D., Instructor in Ophthalmology.[2]
Samuel H. Bryant, A.B., D.D.S., Instructor in Oral Diagnosis, School of Dentistry.
William J. Bryson, A.B., M.D., Instructor in Pathology.
Lucile J. Caldwell, M.D., Instructor in Dermatology.
Joseph P. Cappuccio, D.D.S., Instructor in Oral Surgery, School of Dentistry.[1]
Thomas A. Christensen, A.B., M.D., Instructor in Pediatrics.[1b]
Richard J. Colfer, B.S., M.D., Instructor in Pathology
Joseph M. Cordi, M.D., Instructor in Pediatrics.
Stuart G. Coughlan, B.S., M.D., Instructor in Surgery.
Richard J. Cross, B.S., M.D., Instructor in Ophthalmology.[1]
Raymond M. Cunningham, A.B., M.D., Instructor in Proctology[2] and Assistant in Surgery.
John R. Davis, M.D., Instructor in Medicine.
W. Allen Deckert, A.B., M.D., Instructor in Gynecology and Assistant in Surgery.
William A. Dodd, M.D., Instructor in Gynecology.[2]
Charles H. Doeller, Jr., A.B., M.D., Instructor in Gynecology,[2] and Assistant in Obstetrics.
William C. Duffy, A.B., M.D., Instructor in Gynecology.[2]

[1a] Appointment effective April 1, 1949.
[1b] Appointment effective July 1, 1948 to June 30, 1949.

Martha C. Eaton, A.B., Sc.M., Instructor in Hygiene and Public Health.[3a]
Ernest S. Edlow, A.B., M.D., Instructor in Gynecology.
Donald E. Fisher, M.D., Instructor in Pathology.[2]
Philip D. Flynn, M.D., Instructor in Medicine.
Paul N. Friedman, A.B., M.D., Instructor in Ophthalmology.
Gerald A. Galvin, M.D., Instructor in Gynecology.[1a]
L. Calvin Gareis, B.S., M.D., Instructor in Pathology.[1]
Jason H. Gaskel, M.D., Instructor in Orthopaedic Surgery.
Russell Gigliotti, D.D.S., Instructor in Oral Diagnosis School of Dentistry.
H. L. Granoff, A.B., M.D., Instructor in Gynecology.[2]
John S. Haines, M.D., Instructor in Genito-Urinary Surgery.[2]
Samuel J. Hankin, M.D. Instructor in Medicine.
Alvin J. Hartz, A.B., M.D., Instructor in Medicine.
Mary L. Hayleck, M.D., Instructor in Pediatrics.
Robert F. Healy, M.D., Instructor in Surgery.
Donald B. Hebb, M.D., Instructor in Proctology[2] and Assistant in Surgery.
William G. Helfrich, B.S., M.D., Instructor in Medicine.
Benjamin Highstein, M.D., Instructor in Dermatology.
Mark B. Hollander, A.B., M.D., Instructor in Dermatology and Syphilology.
Calvin Hyman, M.D., Instructor in Surgery.
Conrad L. Inman, D.D.S., Instructor in Anesthesiology, School of Dentistry.[1]
Edward S. Kallins, B.S., M.D., Instructor in Medicine.
William H. Kammer, Jr., A.B., M.D., Instructor in Medicine.
Harry F. Kane, M.D., Instructor in Gynecology.[2]
Theodore Kardash, B.S., M.D., Instructor in Gynecology[2] and Pathology.[1]
Clyde F. Karns, B.S., M.D., Instructor in Surgery.
A. Kremen, A.B., M.D., Instructor in Ophthalmology.
Louis J. Kroll, A.B., M.D., Instructor in Medicine.
Arnold F. Lavenstein, Instructor in Pediatrics.
F. Ford Loker, B.S., M.D., Instructor in Surgery.[2]
Helen I. Maginnis, M.D., Instructor in Gynecology.[2]
Charles B. Marek, M.D., Instructor in Gynecology.[2]
Joseph H. Marshall, M.D., Instructor in Psychiatry.
D. J. McHenry, B.S., M.D., Instructor in Ophthalmology.[2]
Margaret E. Mellott, B.S., Instructor in Biochemistry.[1]
Israel P. Meranski, B.S., M.D., Instructor in Pediatrics.
J. Duer Moores, B.S., M.D., Instructor in Surgery.
J. Huff Morrison, M.D., Instructor in Obstetrics.
S. Edwin Muller, M.D., Instructor in Medicine.
Joseph E. Muse, Jr., B.S., M.D., Instructor in Medicine.
Ruth Musser, M.S., Instructor in Pharmacology.
John A. Myers, M.E.E., M.D., Instructor in Medicine, Assistant in Gastro-Enterology.
Francis J. McLaughlin, M.D., Instructor in Psychiatry.
Samuel Novey, M.D., Instructor in Psychiatry.
M. Paul Padget, M.D., Instructor in Medicine.
Richard H. Pembroke, Jr., A.B., M.D., Instructor in Psychiatry.
Patrick C. Phelan, Jr., Instructor in Surgery.[2]
Ross Z. Pierpont, M.D., Instructor in Surgical Anatomy.
Samuel E. Proctor, A.B., M.D., Instructor in Surgery.

[1a] Appointment effective Oct. 1, 1948, to June 30, 1949.
[3a] Resigned December 23, 1948.

Phoebe Rich, M.S.S., Instructor in Psychiatric Social Work.[1a]
Daniel R. Robinson, M.D., Instructor in Surgery.
Seymour W. Rubin, M.D., Instructor in Pathology.
William J. Rysanek, Jr., M.D., Instructor in Gynecology.[2]
Clarence P. Scarborough, M.D., Instructor in Surgery.
John F. Schaefer, B.S., M.D., Instructor in Surgery.
Joseph C. Sheehan, B.S., M.D., Instructor in Gynecology.[2]
Robert C. Sheppard, M.D., Instructor in Surgery.
E. Roderick Shipley, A.B., M.D., Instructor in Surgery.[2]
Albert J. Shochat, B.S., M.D., Instructor in Gastro-Enterology.
Ruby A. Smith, B.S., M.D., Instructor in Ophthalmology.
Melchijah Spragins, B.S., M.D., Instructor in Pediatrics.[1b]
Edwin H. Stewart, Jr., M.D., Instructor in Surgery.[2]
Cleo D. Stiles, M.D., instructor in Ophthalmology.
William T. Supik, M.D., Insrtuctor in Proctology.[2]
David Tenner, M.D., Instructor in Medicine.
Raymond K. Thompson, B.S., M.D., Instructor and Director of Research in Neurological Surgery.[2]
Wilfred H. Townshend, Jr., A.B., M.D., Instructor in Medicine.
Robert B. Tunney, A.B., M.D., Instructor in Gynecology.[2]
William D. VandeGrift, M.D., Instructor in Pathology.
Harold L. Vyner, M.D., Instructor in Psychiatry.
Frederick J. Vollmer, B.S., M.D., Instructor in Medicine.
Daniel Wilfson, Jr., A.B., M.D., Instructor in Medicine.

ASSISTANTS

A. Maynard Bacon, Jr., B.S., M.D., Assistant in Pediatrics.[1]
Ernest E. Banfield, Jr., A.B., M.D., Assistant in Surgery.[1c]
Jane L. Bleakley, Assistant in Art as Applied to Medicine.[1]
Ross C. Brooks, M.D., Assistant in Rhinology and Laryngology.[1]
Frances C. Brown, A.B., Assistant in Physiology.
Joseph G. Bird, A.B., M.D., Assistant in Pharmacology.
A. V. Buchness, A.B., M.D., Assistant in Surgery.
John W. Chambers, M.D., Assistant in Surgery, and Neurological Surgery.
L. T. Chance, M.D., Assistant in Surgery.
Jerome Cohn, M.D., Assistant in Medicine.
Jonas Cohen, M.D., Assistant in Medicine.
Morris M. Cohen, M.D., Assistant in Dermatology.
Sara Cook, M.D., Assistant in Post Graduate Medicine.[1d]
Donald D. Cooper, M.D., Assistant in Pediatrics.
Samuel H. Culver, M.D., Assistant in Surgery.
E. Hollister Davis, A.B., M.D., Assistant in Anaesthesia.
George H. Davis, M.D., Assistant in Obstetrics.
John B. DeHoff, M.D., Assistant in Medicine.
Michael L. DeVincentis, B.S., M.D., Assistant in Surgery.[2]
William C. Dunnigan, A.B., M.D., Assistant in Surgery.

[1a] Appointment effective Jan. 1, 1950.
[1b] Appointment effective September 24, 1948.
[1c] Appointment effective January 1, 1949.
[1d] Appointment effective September 9, 1949.

Morris A. Fine, M.D., Assistant in Medicine and Genito-Urinary Surgery.
Audrey M. Funk, A.B., Assistant in Medicine.
William H. Fusting, M.D., Assistant in Medicine.
L. Calvin Gareis, B.S., M.D., Assistant in Obstetrics.
William R. Geraghty, B.S., M.D., Assistant in Surgery.
Louis F. Goodman, M.D., Assistant in Surgery.[1]
Richard D. Grill, Assistant in Art as Applied to Medicine.
Joseph B. Gross, B.S., M.D., Assistant in Medicine.
Charles W. Hawkins, M.D., Assistant in Genito-Urinary Surgery.[1]
L. Ann Hellen, B.S., Assistant in Medicine.
Sylvia Himmelfarb, A.B., Assistant in Physiology.
John H. Hirschfeld, M.A., Assistant in Laryngology and Medicine.[1a]
William A. Holbrook, Jr., M.D., Assistant in Medicine.[1b]
John V. Hopkins, M.D., Assistant in Orthopaedic Surgery.
Rollin C. Hudson, M.D., Assistant in Medicine.
Robert W. Johnson, III, A.B., M.D., Assistant in Plastic Surgery.[1c]
James R. Karns, B.S., M.D., Assistant in Medicine, and Physician in charge of Medical care of Students.
Schuyler G. Kohn, B.S., M.D., Assistant in Obstetrics.
Alfred S. Lederman, Assistant in Gastro-Enterology.
Frank E. Leslie, A.B., M.D., Assistant in Medicine.
Lorman L. Levinson, A.B., M.D., Assistant in Obstetrics.[1e]
V. Harwood Link, A.B., M.D., Assistant in Dermatology.
W. Kenneth Mansfield, Jr., M.D., Assistant in Obstetrics.
Howard B. McElwain, M.D., Assistant in Surgery.
John C. Osborne, M.D., Assistant in Medicine.
Frank J. Otanasek, M.D., Assistant in Neurological Surgery.
Ross Z. Pierpont, M.D., Assistant in Surgery.[1]
Susan R. Pincoffs, R.N., Assistant in Medicine.[1]
Hazel Y. Pruitt, Assistant in Bacteriology.
Frederick M. Reese, A.B., M.D., Assistant in Ophthalmology.
William F. Renner, M.D., Assistant in Medicine.[1d]
James Russo, M.D., Assistant in Anaesthesiology.
J. King B. E. Seegar, Jr., A.B., M.D., Assistant in Obstetrics.
Jerome Sherman, M.D., Assistant in Medicine.[1c]
E. Roderick Shipley, A.B., M.D., Assistant in Surgery.
Elizabeth Smith, M.S.S., Assistant in Psychiatric Social Work.[1f]
Samuel Snyder, M.D., Assistant in Medicine.
O. Walter Spurrier, M.D., Assistant in Pediatrics.
Carl Christian Stein, Assistant in Art as Applied to Medicine.[1]
Stuart D. Sunday, M.D., Assistant in Medicine.
Adam Swiss, M.D., Assistant in Medicine.
T. J. Touhey, M.D., Assistant in Surgery.
Stephen J. Van Lill, III, A.B., M.D., Assistant in Medicine.
William Earl Weeks, M.D., Assistant in Pediatrics.

[1a] Appointment effective Oct. 7, 1948.
[1b] Appointment effective Sept. 13, 1948 to June 30, 1949.
[1c] Appointment effective Sept. 1, 1948.
[1d] Appointment effective Jan. 24, to May 28, 1949.
[1e] Appointment effective June 1, 1949.
[1f] Appointment effective Jan. 1, 1950.

J. Carlton Wich, B.S., M.D., Assistant in Pediatrics.
Marcella Wiseman, M.S.S., Assistant in Psychiatric Social Work.[1k]
Thomas L. Worsley, M.D., Assistant in Medicine.
Howard L. Zupnik, M.D., Assistant in Surgery.

FELLOWS

Phillip R. Apffel, M.D., Fellow in Psychiatry.[1a]
Ruth W. Baldwin, A.B., M.D., Fellow in Pediatrics.[1b]
Frederick K. Bell, Ph.D., U. S. Pharmacopoeia Fellow.
Harold P. Biehl, National Cancer Research Trainee.[1]
Joseph G. Bird, A.B., M.D., Fellow in Pharmacology.
George W. Bradford, M.D., Baltimore Rh Laboratory, Fellow in Medicine.[3]
Raymond M. Burgison, M.S., Fellow in Pharmacology.[1i]
Robert G. Chambers, M.D., National Cancer Research Trainee.
Russell Lee Christopher, Weaver Fellow in Anatomy.[1e]
Sarah Cook, M.D., Fellow in Pediatrics.[1b]
Robert M. N. Crosby, M.D., Hitchcock Fellow in Neurological Surgery.[1]
John M. Dennis, B.S., M.D., Fellow in Roentgenology.
Mary S. Fassel, A.B., Emerson Fellow in Pharmacology.[1h]
Joseph A. Guilbeau, Jr., M.D., Baltimore Rh Laboratory Fellow in Obstetrics[3]
John B. Harman, B.S., Emerson Fellow in Pharmacology.[1h]
Dorothy H. Hubbard, Weaver Fellow in Biological Chemistry.[1]
Dewitt T. Hunter, Weaver Fellow in Anatomy.[1e]
Frederick Go-Kiatsu, B.S., M.D., Fellow in Pediatrics.[1b]
Raymond F. Kline, B.S., M.S., Porter Fellow in Physiology.
Chi Chan Ling, Ph.C., M.S., Ohio Chemical Co. Fellow in Pharmacology.[1h]
William E. Loechel, Fellow in Anatomy.[1j]
Arlie R. Mansberger, Jr., M.D., Research Fellow in Surgery.[1b]
Marion A. Marfy, M.A., Fellow in Clinical Psychology.[1a]
Suzanne Mohler, B.S., Fellow in Psychiatry.[1a]
J. Pomeroy Nichols, M.D., Hoffberger Fellow in Neurological Surgery.[1]
John C. Ozazewski, M.D., Fellow in Neuro-Surgery.[1d]
John W. Pence, Fellow in Pharmacology.[1f, 3b]
Aaron Podolnick, B.S., M.D., Fellow in Psychiatry.
Ruth Rabinovitch, A.B., M.D., Fellow in Psychiatry.[1a]
C. L. Spurling, M.D., Baltimore Rh Laboratory Fellow in Medicine.[1]
Wm. Stark, M.D., Fellow in Psychiatry.[1a]
Edward B. Truitt, B.S., Markle Fellow in Pharmacology.
Robert T. Walker, M.D., Fellow in Medicine.[1]
Geraldine F. Wolfe, B.S., U.S.P.H. Fellow in Anatomy.[1]

[1a] Appointment effective September 16, 1948.
[1b] Appointment effective July 1, 1949 to June 30, 1950.
[1d] Appointment effective January 1, 1949 to June 30, 1949.
[1e] Appointment effective June 1, to August 31, 1949.
[1f] Appointment effective October 1, 1948 to July 31, 1949.
[1g] Appointment effective October 1, 1948 to September 30, 1949.
[1h] Appointment effective September 1, 1949 to August 31, 1950
[1i] Appointment effective October 1, 1949 to September 30, 1950.
[1j] Appointment effective July 1, to Aug. 31, 1949.
[1k] Appointment effective Jan. 1, 1950.
[3b] Resigned June 30, 1949.

RESEARCH ASSISTANTS

Jane F. Beardsley, B.S., Research Assistant in Biological Chemistry.[1c]
Norma F. McElvain, Research Assistant in Biological Chemistry.[3a]

EXTRAMURAL ASSISTANT RESIDENTS IN MEDICINE

John F. Benson, M.D., Assistant Resident in Medicine.[1]
Howard E. Hall, M.D., Assistant Resident in Medicine.[1]
William Roemmich, M.D., Assistant Resident in Medicine.[1d]
Sidney J. Venable, M.D., Assistant Resident in Medicine.[1]

UNIVERSITY HOSPITAL

EXECUTIVE COMMITTEE OF THE STAFF

John E. Savage, *Chairman*
Theodore E. Woodward, *Secretary*

Charles Reid Edwards
T. Nelson Carey
J. Mason Hundley, Jr.
Louis H. Douglass
Walter L. Kilby
Alfred T. Nelson
Milton S. Sacks
J. Edmund Bradley
George H. Yeager
F. Edwin Knowles

Elected Members	*Term Expires*
Ephraim T. Lisansky	1949
A. H. Finkelstein	1949
Howard B. Mays	1949
Harry C. Hull	1949
Samuel T. H. Revell, Jr.	1950
Henry F. Ullrich	1950

Maurice C. Pincoffs, *Assistant to the President*	*Ex officio members*
H. Boyd Wylie, *Dean*	
George H. Buck, *Director of the University Hospital*	

UNIVERSITY HOSPITAL STAFF

George H. Buck, *Director*

Physicians-in-Chief	Maurice C. Pincoffs T. Nelson Carey
Physicians	Thomas P. Sprunt Louis A. M. Krause Williams S. Love, Jr.
Gastro-Enterologist	Francis Dickey Samuel Morrison

[1c] Appointment effective September 1, 1949 to June 30, 1950.
[1d] Appointment effective Jan. 1, 1949 to June 30, 1949.
[3a] Resigned, February 1, 1949.

Neurologists	Irving J. Spear[4] Leon Freedom William Fearing Edward F. Cotter
Psychiatrist-in-Chief	Jacob E. Finesinger
Psychiatrists	Ralph P. Truitt H. Whitman Newell
Pediatrician-in-Chief	J. Edmund Bradley
Pediatricians	C. Loring Joslin Albert Jaffe A. H. Finkelstein William M. Seabold
Dermatologist-in-Chief	Harry M. Robinson, Sr.
Dermatologists	Francis A. Ellis Harry M. Robinson, Jr.
Pathologist-in-Chief	Hugh R. Spencer
Pathologists	Dexter L. Reimann John A. Wagner
Surgeon-in-Chief	Charles Reid Edwards
Surgeons	George H. Yeager Otto C. Brantigan Charles A. Reifschneider Harry C. Hull
Neurological Surgeon-in-Chief	Charles Bagley, Jr.
Neurological Surgeons	Richard G. Coblentz James G. Arnold, Jr.
Laryngologist-in-Chief	Edward A. Looper
Laryngologists	Franklin B. Anderson Thomas R. O'Rourk
Proctologist-in-Chief	Monte Edwards
Proctologist	Thurston R. Adams
Orthopedic Surgeon-in-Chief	Allen F. Voshell
Orthopedic Surgeons	Moses Gellman Henry F. Ullrich Milton J. Wilder
Genito-Urinary Surgeon-in-Chief	W. Houston Toulson
Genito-Urinary Surgeons	Lyle J. Milan Howard B. Mays
Dental Surgeon-in-Chief	Brice M. Dorsey

---

[4] Retired.

Dentists	Myron S. Aisenberg Joseph C. Biddix Samuel H. Bryant Joseph P. Cappuccio Edward C. Dobbs Grayson W. Gaver Russell Gigliotti Hugh T. Hicks Conrad L. Inman Ernest B. Nuttall Kenneth V. Randolph Wilbur O. Ramsey Lewis C. Toomey
Roentgenologist-in-Chief	Walter L. Kilby
Roentgenologists	Charles N. Davidson Donald J. Barnett
Bronchoscopist-in-Chief	Edward A. Looper
Bronchoscopists	Frederick T. Kyper John H. Hirschfeld
Otologist-in-Chief	Thomas R. O'Rourk
Anesthesiologist-in-Chief	Alfred T. Nelson
Obstetrician-in-Chief	Louis H. Douglass
Obstetricians	J. Morris Reese Isadore A. Siegel John E. Savage Hugh B. McNally
Ophthalmologist-in-Chief	F. Edwin Knowles, Jr.
Gynecologist-in-Chief	J. Mason Hundley, Jr.
Gynecologists	Leo Brady Beverly C. Compton John C. Dumler William K. Diehl Everett S. Diggs Ernest I. Cornbrooks, Jr.
Oncologist-in-Chief	Grant E. Ward
Oncologist	J. Mason Hundley, Jr.
Physical Therapist	Grace E. Shaw

UNIVERSITY HOSPITAL RESIDENT AND INTERN STAFF

July 1, 1949 to June 30, 1950

José A. Alvarez, B.S., M.D., *Assistant Resident in Neurosurgery*
Robert C. Arrants, B.A., M.D., *Assistant Resident in Obstetrics*
Joseph W. Baggett, A.B., M.D., *Assistant Resident in Gynecology*
Thomas G. Barnes, A.B., M.D., *Assistant Resident in Surgery*
Robert E. Bauer, A.B., M.D., *Resident in Medicine*
Raymond G. Berggreen, A.B., M.D., *Assistant Resident in Pediatrics*
Frank J. Brady, B.S., M.D., *Resident in Anesthesiology*

Frank E. Brumback, M.D., *Assistant Resident in Surgery*
Robert E. Cato, A.B., M.D., *Assistant Resident in Roentgenology*[1]
Rowell, C. Cloninger, A.B., M.D., *Assistant Resident in Surgery*
William C. Covey, M.D., *Assistant Resident in Obstetrics (assigned to Gynecology)*
Garrett, E. Deane, A.B., M.D., *Assistant Resident in Pediatrics*
John M. Dennis, B.S., M.D., *Fellow in Roentgenology*
John E. Evans, Jr., B.S., M.D., *Assistant Resident in Surgery*
Joseph B. Ganey, A.B., M.D., *Assistant Resident in Surgery*
Richard A. Gilbert, M.D., *Assistant Resident in Gynecology*
Benjamin M. Gold, B.S., M.D., *Assistant Resident in Obstetrics*
David B. Gray, B.S., M.D., *Assistant Resident in Surgery*
F. Robert Haase, B.S., M.D., *Resident in Otorhinolaryngology and Ophthalmology*
Robert C. Hagan, B.S., M.D., *Assistant Resident in Medicine*
Robert R. Hahn, M.D., *Assistant Resident in Medicine*
Charles W. Hawkins, M.D., *Resident in Urology*
John A. Hightower, M.D., *Assistant Resident in Medicine*
Mark E. Holt, Jr., B.S., M.D., *Assistant Resident in Medicine*
Richard D. Hoover, B.S., M.D., *Assistant Resident in Surgery*
Ann Howard, B.S., M.D., *Assistant Resident in Pediatrics*
Jerome Imburg, B.S., M.D., *Assistant Resident in Pediatrics*
Blackburn S. Joslin, M.D., *Resident in Pediatrics*
H. James Lambert, B.S., M.D., *Assistant Resident in Surgery*
William D. Lynn, A.B., M.D., *Resident in Surgery*
Eugene R. McNinch, *M.D., Assistant Resident in Roentgenology*
James R. McNinch, Jr., A.B., M.D., *Assistant Resident in Surgery*
Louis Manganiello, A.B., M.D., *Resident in Neurosurgery*
Gerald A. Martin, B.S., M.D., *Assistant Resident in Medicine*
James V. Minor, Jr., A.B., M.D., *Assistant Resident in Pediatrics*
John C. Ozazewski, M.D., *Resident in Ophthalmology*
S. Malone Parham, A.B., M.D., *Assistant Resident in Obstetrics*
W. Stuart Patterson, M.D., *Assistant Resident in Obstetrics*
Benson C. Schwartz, M.D., *Intern in Obstetrics*
James H. Shell, B.S., M.D., *Assistant Resident in Gynecology*
George W. Smith, M.D., *Assistant Resident in Neurological Surgery—Assigned to Baltimore City Hospitals.*
F. X. Paul Tinker, B.S., M.D., *Resident in Gynecology*
John P. White, III, M.D., *Assistant Resident in Surgery*
David R. Will, M.D., *Assistant Resident in Surgery*
James R. Winterringer, B.S., M.D., *Resident in Obstetrics*
Isaac C. Wright, B.S., M.D., *Assistant Resident in Medicine*[2]
Latimer G. Young, A.B., M.D., *Assistant Resident in Pediatrics*

SENIOR INTERNS

David Auld, A.B., M.D.
James M. Bisanar, M.D.
John R. Hankins, B.A., M.D.
Frederick J. Heldrich, Jr., M.D.
William J. Holloway, M.D.
H. Patterson Mack, M.D.
Nicholas Mallis, M.D.
Fred R. McCrumb, M.D.
William A. Niermann, M.D.
Kyle L. Swisher, Jr., M.D.
Frank J. Theuerkauf, Jr., M.D.

---

[1] Until October 31, 1949.
[2] Until September 30, 1949.

JUNIOR INTERNS

Robert A. Abraham, B.S., M.D.
Leonard Bachman, B.S., M.D.
Edward J. Broaddus, M.D.
Charles T. Henderson, M.D.
Arthur F. Hoge, Jr., B.S., M.D.
Edwin M. Hubbard, M.D.
Edmund B. Middleton, M.D.
Herbert K. Speers, M.D.
John W. Stover, M.D.
John F. Strahan, M.D.

DENTAL INTERN

Pedro H. Hernandez-Paralitici, D.D.S.

UNIVERSITY HOSPITAL DISPENSARY STAFF

Emma Winship, R.N.
Dispensary Director

DISPENSARY COMMITTEE

George H. Yeager, *Chairman*
Emma Winship, R.N., *Secretary*

Allen Fiske Voshell
Beverley C. Compton
A. H. Finkelstein
Lewis P. Gundry
Howard B. Mays
J. Huff Morrison

Chief of Medical Clinic	————————
Physicians	T. Nelson Carey Milton S. Sacks Frank J. Geraghty Edward F. Cotter Irving Freeman M. Paul Byerly William K. Waller E. T. Lisansky Walter Karfgin Kurt Levy Joseph E. Muse, Jr. Samuel J. Hankin Morris Fine James R. Karns John B. DeHoff Charles H. Williams Jonas Cohen Stephen Van Lill, III
Chief of Gastro-Enterology Clinic	Francis G. Dickey
Assistant Gastro-Enterologist	Z. Vance Hooper Albert J. Shochat
Chief of Neurology Clinic	Leon Freedom

Assistant Neurologists	William L. Fearing Harry A. Teitelbaum
Chief of Psychiatric Clinic	Ralph P. Truitt
Clinic Director	H. Whitman Newell
Assistant Psychiatrists	Hans W. Leowald Kathryn L. Schultz Richard Pembroke
Chief of Chest Clinic	Meyer D. Jacobson
Assistant, Diseases of the Lungs	Manuel Levin
Chief of Diabetic Clinic	Samuel T. R. Revell
Chief of Cardiovascular Clinic	C. Edward Leach
Assistant Cardiologists	Wilfred H. Townshend Rollin C. Hudson Sidney Scherlis Stephen J. Van Lill, III Fred B. Agee, Jr. James J. Nolan
Chief of Allergy Clinic	Jerome Sherman
Assistant Allergists	Edward S. Kallins J. Carlton Wich Irvin Bernard Kemick
Allergy Clinic Technicians	Selma R. Goldsmith Shirley W. Correl
Director, Pediatric Clinic	A. H. Finkelstein
Chief of Pediatric Clinic	Samuel S. Glick
Assistant Pediatricians	Louis V. Blum Arnold F. Lavenstein Thomas E. Weeks J. Carlton Wich Howard Goodman Melvin N. Borden Lester Caplan Ruth B. Baldwin
Director, Pediatric Cardiac Clinic	Sidney Scherlis
Assistant Director, Pediatric Cardiac Clinic	Gibson J. Wells
Chief of Endocrinology Clinic	Conrad B. Acton
Assistant in Endocrinology Clinic	Daniel E. Bogorad
Chief of Surgical Clinic	Robert C. Sheppard
Assistant Surgeons	E. Roderick Shipley Samuel E. Proctor William B. Settle Karl F. Mech

Chief of Plastic Surgery	Edward A. Kitlowski
Professor of Speech	Ray Ehrensberger, Ph.D.
Associate Professor of Speech, University of Maryland at College Park	Merle Ansberry, Ph.D.
Chief of Orthopedic Surgery Clinic	Allen Fiske Voshell
Assistant Orthopedic Surgeons	Moses Gellman Henry F. Ullrich Milton J. Wilder James P. Miller Robert P. Abrams A. Wesley Johnson Francis Soholt
Chief of Genito-Urinary Clinic	W. Houston Toulson
Assistant Genito-Urinary Surgeons	John F. Hogan Lyle J. Millan Morris A. Fine Howard B. Mays
Director of Dermatology and Syphilis Clinic	Harry M. Robinson, Sr.
Chief of Dermatology and Syphilis Clinic	Harry M. Robinson, Jr.
Dermatologists and Syphilologists	Francis A. Ellis Israel Zeligman A. Albert Shapiro R. C. V. Robinson Eugene S. Bereston
Assistant Dermatologists and Syphilologists	Benjamin Highstein Lucile Caldwell V. Harwood Link Morris M. Cohen Mark B. Hollander Alfred H. Dann
Chief of Rhinology and Laryngology Clinic	Benjamin S. Rich
Assistant Rhinologists and Laryngologists	Thomas R. O'Rourk Samuel L. Fox Albert Steiner Richard J. Cross Ross C. Brooks
Chief of Proctology Clinic	Monte Edwards
Assistant Proctologists	Thurston R. Adams Donald B. Hebb William J. Supik Raymond Cunningham
Chief of Gynecology Clinic	J. Mason Hundley, Jr.
Assistant Chief of Gynecology Clinic	Beverly C. Compton

Assistant Gynecologists	John C. Dumler William K. Diehl Everett S. Diggs Ernest I. Cornbrooks, Jr. John T. Hibbitts Kenneth B. Boyd W. Allen Deckert Helen I. Maginnis Charles B. Marek Stuart Rizika Theodore Kardash
Female Cystoscopists	J. Mason Hundley, Jr. Beverly C. Compton William K. Diehl Ernest I. Cornbrooks, Jr. Everett S. Diggs
Chief of Dental Clinic	Brice M. Dorsey
Assistant Chief of Dental Clinic	Lewis C. Toomey
Assistant Dentists	William O. Ramsey Russell Gigliotti Samuel H. Bryant Edward C. Dobbs Joseph P. Cappuccio
Chief of Obstetrical Clinic	J. Huff Morrison
Assistant Chief of Obstetrical Clinic	Margaret B. Ballard
Assistant Obstetricians	John E. Savage Kenneth B. Boyd W. Kenneth Mansfield L. Calvin Gareis J. K. B. E. Seegar Charles H. Doeller, Jr. George H. Davis Schuyler G. Kohn Theodore Kardash Lorman L. Levinson
Chief of Oncology Clinic, Gynecological Division	J. Mason Hundley, Jr.
Assistants in Gynecological Division	John C. Dumler William K. Diehl Ernest I. Cornbrooks, Jr. Everett S. Diggs
Chief of Oncology Clinic, Surgical Division	Grant E. Ward
Assistants in Surgical Division	Arthur G. Siwinski E. Eugene Covington J. Duer Moores Edwin H. Stewart, Jr. Louis E. Goodman

Chief of Vascular Clinic	George H. Yeager
Assistant Chief of Vascular Clinic	Raymond Cunningham
Medical Consultant—Vascular Clinic	Lewis P. Gundry
Chief of Ophthalmology Clinic	F. Edwin Knowles, Jr.
Assistant Ophthalmologists	Paul N. Friedman Cleo D. Stiles Ruby A. Smith Frederick M. Reese D. J. McHenry J. E. Bromback, Jr. Richard J. Cross
Occupational Therapist	Miss Lora E. Dunetz
Directress, Social Service	Miss Mary Fitzpatrick

MEDICAL CARE CLINIC

Director	Henry W. D. Holljes
Assistant Director	Susan R. Pincoffs

The Medical Care Clinic of the University of Maryland is the result of a study by the Medical and Chirurgical Faculty of Maryland in cooperation with the State Planning Commission. The present Clinic, located on the third floor of the Dispensary Building, is the first of its kind in this country. Public assistance clients are referred to the Clinic by the Baltimore City Health Department and are scheduled for an initial physical examination by physicians affiliated with the University of Maryland. A family physician is chosen by the patient from a list available at the Clinic. Copies of the individual's medical history and examinations are sent to the physician selected, who then becomes responsible for the medical care of the patient.

The Medical Care Program is, in this way, an entirely new approach to the problem of the indigent patient. For the first time, he becomes the responsibility of a private physician. This places the practice of medicine to the indigent on a par with the practice of private medicine.

After the initial examination, the Clinic functions as a diagnostic center to serve the needs of the neighborhood practitioner. Consultants working in the Medical Care Clinic are available and at present represent Medicine, Surgery, Gynecology and Otolaryngology. Others will be added as required.

The Clinic functions between 8:30 and 4:30 daily. Registrations and referrals are conducted in the morning. Clinical examinations and consultations are held during the afternoon. Approximately eighty neighborhood physicians have agreed to work with the Medical Care Program. Twenty-five members of the Out-patient Department and University Hospital Staff will conduct examinations in the Clinic.

The Faculty Committee on Post Graduate Education has also undertaken plans to provide instruction to all affiliated physicians.

5,550 public assistance clients have been assigned to this Clinic.

DISPENSARY REPORT FOR YEAR BEGINNING JULY 1, 1947 AND ENDING JUNE 30, 1948

Departments	*New Cases*	*Old Cases*	*Total*
Allergy	171	4,916	5,087
Cardiology	112	1,379	1,491
Cystoscopy	87	618	705
Dermatology	11,435	12,560	23,995
Diabetic	68	873	941
Ear, Nose and Throat	1,112	2,244	3,356
Endocrine	60	230	290
Eye	972	2,924	3,896
Gastro-Intestinal	157	840	997
Genito-Urinary	373	970	1,343
Gynecology	1,624	5,931	7,555
Hematology	7	127	134
Medicine	2,347	5,468	7,815
Neurology	178	609	787
Neuro-Surgery	235	435	670
Obstetrics	1,917	16,032	17,949
Occupational Therapy	117	1,324	1,441
Oncology	204	1,319	1,523
Oral Surgery	624	1,125	1,749
Orthopedic	1,440	3,915	5,355
Pediatric	2,003	6,523	8,526
Physiotherapy	108	706	814
Plastic Surgery	27	31	58
Proctology	146	307	453
Psychiatry	382	486	868
Surgery	3,288	8,252	11,540
Tuberculosis	127	730	857
Vascular	112	597	709
Total	29,433	81,471	110,904

MERCY HOSPITAL

BOARD OF GOVERNORS

Walter D. Wise, *Chairman*

Mother M. Bernadette
Sister M. Veronica
Sister M. Carmel
Sister M. Cornelia
Sister M. Vincent
Sister M. Joseph

Henry F. Bongardt
H. Raymond Peters
Maurice C. Pincoffs
Waitman F. Zinn
Thomas K. Galvin
Edward P. Smith

Elliott H. Hutchins
President of Visiting Staff

MERCY HOSPITAL STAFF

Surgeon-in-Chief	Walter D. Wise
Surgeons	Elliott H. Hutchins F. L. Jennings R. W. Locher Thomas R. Chambers D. J. Pessagno William F. Rienhoff Henry F. Bongardt
Neurological Surgeons	Charles Bagley, Jr. Richard B. Coblentz James D. Arnold, Jr. Frank J. Otenasek John W. Chambers Raymond K. Thompson
Associate Surgeons	I. O. Ridgely James W. Nelson Howard B. McElwain Simon H. Brager John A. O'Connor Charles W. Maxson I. Ridgeway Trimble Raymond F. Helfrich
Assistant Surgeons	Julius Goodman S. DeMarco, Jr. T. J. Touhey William N. McFaul, Jr. Meyer H. Zuravin Howard L. Zupnik Daniel R. Robinson Joseph V. Jerardi Wm. C. Dunnigan Harold H. Burns William L. Garlick John F. Schaeffer F. Ford Loker Patrick C. Phelan, Jr. Michael L. DeVincentis
Plastic Surgeon	Edward A. Kitlowski Clarence P. Scarborough
Consulting Ophthalmologist and Otologist	Harry Friedenwald
Ophthalmologist	F. Edwin Knowles, Jr.
Associate Ophthalmologist	Joseph V. Jeppi
Associate Ophthalmologists and Otologists	M. Raskin Joseph I. Kemler F. A. Pacienza

Consulting Rhinologists and Laryngologists	W. Raymond McKenzie George W. Mitchell
Rhinologist and Laryngologist	Waitman F. Zinn
Associate Rhinologists and Laryngologists	Fayne A. Kayser Benjamin S. Rich Theodore A. Schwartz Birkhead Macgowan Benjamin H. Isaacs
Assistant Rhinologist and Laryngologist	Joseph V. Jeppi
Bronchoscopist	Waitman F. Zinn
Associate Bronchoscopist	Fayne A. Kayser
Assistant Bronchoscopist	Theodore A. Schwartz
Consulting Orthopaedic Surgeon	Albertus C. Cotton
Orthopaedic Surgeon	H. L. Rogers
Associate Orthopaedic Surgeon	Henry F. Ullrich
Assistant Orthopaedic Surgeons	I. H. Maseritz J. H. Gaskel
Proctologist	Simon P. Brager
Urologist	Kenneth D. Legge
Associate Urologists	Leon K. Fargo Francis W. Gillis J. S. Haines
Dermatologists	Francis A. Ellis Eugene S. Bereston
Dentist	J. D. Fusco
Consulting Dentist	Conrad L. Inman
Consulting Physician	Maurice C. Pincoffs
Physician-in-Chief	H. Raymond Peters
Physicians	Harvey G. Beck Thomas P. Sprunt George McLean J. Sheldon Eastland Louis A. M. Krause Thomas C. Wolff
Associate Physicians	Hubert C. Knapp Bartus T. Baggott Wetherbee Fort T. Nelson Carey Sol Smith Hugh J. Welch

Assistant Physicians	S. A. Tumminello J. Howard Burns Earl L. Chambers K. W. Golley William H. Kammer S. Edwin Muller John R. Davis, Jr. J. Emmett Queen Frederick J. Vollmer John C. Osborne
Associate Gastro-Enterologists	R. Frederick Leitz Theodore H. Morrison Maurice Feldman
Assistant Gastro-Enterologist	Philip D. Flynn
Pediatricians	Edgar B. Friedenwald Frederick B. Smith
Associate Pediatrician	G. Bowers Mansdorfer
Assistant Pediatricians	Jerome Fineman O. Walter Spurrier Israel P. Meranski Edward L. Frey, Jr.
Associate Neurologists and Psychiatrists	Harry Goldsmith Philip F. Lerner
Anesthesiologist	James Russo
Obstetrician-in-Chief	Edward P. Smith
Obstetricians	J. J. Erwin Thomas K. Galvin Frank K. Morris Ernest S. Edlow Hugh B. McNally
Associate Obstetricians	William C. Duffy Charles H. Doeller, Jr.
Assistant Obstetricians	J. Howard Burns Harry F. Kane William A. Dodd Harry McB. Beck Joseph C. Sheehan William J. Rysanek, Jr. Robert B. Tunney
Gynecologist-in-Chief	Thomas K. Galvin
Gynecologists	Edward P. Smith J. J. Erwin Frank K. Morris

Associate Gynecologists	Ernest S. Edlow George A. Strauss, Jr. H. L. Granoff Gerald Galvin
Assistant Gynecologists	Charles H. Doeller, Jr. William A. Dodd Harry McB. Beck William C. Duffy Joseph C. Sheehan William J. Rysanek, Jr. Harry F. Kane Robert B. Tunney
Pathologists	Walter C. Merkel Hugh R. Spencer
Clinical Pathologist	H. T. Collenberg
Clinical Hematologist	H. Raymond Peters
Clinical Biochemist	Charles E. Brambel
Technicians	Sister Paula Marie Eleanor Behr Elisabeth Johnson Carmela E. Minnick Constance Chapman Theresa Ringrose Rita Berry
Consulting Radiologist	Albertus Cotton
Radiologist	Asa D. Young
Assistant Radiologist	E. Eugene Covington
Technicians	Sister Paula Marie Eleanor Behr Elizabeth Johnson Carmela E. Miceli Lillian Butler Betty Wolfram Virginia Schwarz Julietta Perez
Technicians (X-ray)	Ruth L. Gephardt Henrietta McCaffrey Frances Muth

ANNUAL HOSPITAL APPOINTMENTS

The following annual appointments are made to the Mercy Hospital:

Six Residents in Surgery
Five Residents in Medicine
Resident in Pediatrics
Resident in Pathllogy
Resident in Rhinology
Four Residents in Gynecology and Obstetrics
Fourteen Interns on Rotating Service

MERCY HOSPITAL RESIDENT AND INTERN STAFF

JULY 1, 1949—JUNE 30, 1950

RESIDENT STAFF

James G. Stegmaier, B.S., M.D., *Resident Surgeon*
Elden H. Pertz, B.S., M.D., *Associate Resident Surgeon*
Karl A. Dillinger, M.D., *Senior Assistant Resident Surgeon*
August Kiel, Jr., M.D., *Senior Assistant Resident Surgeon*
Rennert M. Smelser, M.D., *Junior Assistant Resident Surgeon*
Clyde D. Thomas, Jr., M.D., *Junior Assistant Resident Surgeon*
John F. Ullsperger, A.B., M.D., *Resident Gynecologist*
Vincent dePaul Fitzpatrick, Jr., A.B., M.D., *Resident Obstetrician*
Claude F. Bailey, A.B., M.D., *Assistant Resident Gynecologist and Obstetrician*
John A. Ferris, B.S., M.D., *Assistant Resident Gynecologist and Obstetrician*
Joseph F. LiPira, B.S., M.D., *Resident Physician*
Thomas P. Connor, A.B., M.D., *Assistant Resident Physician*
Allyn F. Judd, A.B., M.D., *Assistant Resident Physician*
Albert M. Powell, Jr., M.D., *Assistant Resident Physician*
James A. Roberts, B.S., M.D., *Assistant Resident Physician*
David Josephs, Jr., A.B., M.D., *Resident Pediatrician*

INTERNS

James A. Cline, III, M.D.
Charles R. Fravel, M.D.
Burton V. Lock, M.D.
Mary E. Matthews, B.S., M.S., M.D.
Homer W. May, B.S., M.D.
John H. Panzarella, M.D.
Howard F. Raskin, B.A., M.D.
Clifford T. Riddel, B.A., M.A., M.D.
Margaret L. Sherrard, B.A., M.D.
John A. Spittel, Jr., B.S., M.D.
Gene D. Trettin, B.S., M.D.

MERCY HOSPITAL DISPENSARY STAFF

Dispensary Director	Sister M. Scholastica
Supervisor of Surgical Clinic	Harold H. Burns
Dispensary Surgeons	I. Ridgway Trimble Simon H. Brager Howard L. Zupnik Daniel R. Robinson Joseph V. Jerardi William C. Dunnigan William L. Garlick John F. Schaefer F. Ford Loker Patrick C. Phelan Arthur G. Siwinski Melvin F. Polek Clarence P. Scarborough Michael L. DeVincentis

Supervisor of Genito-Urinary Clinic	Kenneth D. Legge
Assistant Genito-Urinary Surgeons	L. K. Fargo Francis W. Gillis John S. Haines
Supervisor of Orthopaedic Clinic	Harry L. Rogers
Orthopaedic Surgeons	Henry F. Ullrich Isaac Gutman I. H. Maseritz Jason H. Gaskel
Supervisor of Medical Clinic	H. Raymond Peters
Chiefs of Medical Clinic	Sol Smith S. Edwin Muller
Assistant Physicians	Frederick J. Vollmer William H. Kammer John R. Davis J. Emmett Queen Charles F. O'Donnell Arthur Karfgin John C. Osborne
Chief of Allergy Clinic	S. Edwin Muller
Chief of Cardiovascular Clinic	Thomas C. Wolff
Assistant Cardiologist	Leon Ashman
Chief of Metabolism Clinic	J. Sheldon Eastland
Assistant in Metabolism Clinic	J. E. Queen
Gastro-Enterologist	Maurice Feldman
Assistant Gastro-Enterologist	Philip Flynn
Chief of Pediatric Clinic	Edgar B. Friedenwald
Pediatricians	Jerome Fineman Israel T. Meranski O. Walter Spurrier Edward L. Frey, Sr. J. Carlton Wich Donald Cooper Earl Weeks Joseph Cordi
Neurologists and Psychiatrists	Philip F. Lerner Henry J. Marriott
Supervisor of Dermatology Clinic	Francis A. Ellis
Dermatologists	Eugene S. Bereston R. C. V. Robinson
Oncologist	James W. Nelson

Chief of Gynecology Clinic	Thomas K. Galvin
Gynecologists	Edward P. Smith J. J. Erwin Frank K. Morris Ernest S. Edlow Charles H. Doeller, Jr. William A. Dodd Harry McB. Beck William C. Duffy Joseph C. Sheehan Harry F. Kane Robert B. Tunney Gerald A. Galvin
Chief of Obstetrical Clinic	Edward P. Smith
Obstetricians	Harry F. Kane Charles H. Doeller, Jr. William A. Dodd Harry McB. Beck William C. Duffy Joseph C. Sheehan Robert B. Tunney
Esophagoscopist	Waitman F. Zinn
Associate Esophagoscopist	Fayne A. Kayser
Rhinologists and Laryngologists	Waitman F. Zinn Theodore A. Schwartz Benjamin H. Isaacs Arthur Ward
Ophthalmologists and Otologists	M. Raskin F. A. Pacienza Joseph V. Jeppi
Proctologist	Simon H. Brager
Assistant Proctologist	William T. Supik
Supervisor of Dental Clinic	J. D. Fusco
Consulting Dentist	Conrad L. Inman
Supervisor of Physiotherapy Clinic	Leon Hannan
Assistant Physiotherapist	Alice R. Hannan
Social Workers	Sister M. Vincent Anna Shawbaker
Secretary	Eva Applegarth

MERCY HOSPITAL DISPENSARY REPORT

Year of 1948

Department	*New Cases*	*Old Cases*	*Total*
Allergy	17	179	196
Bronchoscopic	332	584	916
Cardiology	12	178	190
Dental	80	71	151
Dermatology	241	663	904
Diabetic	19	405	424
Gastro-Intestinal	22	113	135
Genito-Urinary	47	144	191
Gynecology	261	545	806
Medicine	454	2,242	2,696
Neurology	51	367	438
Ophthalmology	245	428	673
Orthopaedics	96	314	410
Pediatrics	384	904	1,288
Physiotherapy	173	1,733	1,906
Plastic Surgery	0	2	2
Postnatal	213	4	217
Prenatal	387	2,474	2,861
Proctology	40	59	99
Rhinolaryngology	402	702	1,104
Surgery	830	2,690	3,520
Surgical Follow-Up	189	351	540
Well Baby Clinic	15	15	30
Totals	4,510	15,167	19,677

THE BALTIMORE CITY HOSPITALS

STAFF, 1949–1950

Parker J. McMillin, *Superintendent*

Surgeon-in-Chief	Otto C. Brantigan, M.D.
Physician-in-Chief, Acting	C. Holmes Boyd, M.D.
Physician-in-Chief, Radiology	Stanley H. Macht, M.D.
Physician-in-Chief, Tuberculosis	H. Vernon Langeluttig, M.D.
Obstetrician-in-Chief	Louis H. Douglass, M.D.
Pediatrician-in-Chief	Harold E. Harrison, M.D.
Pathologist-in-Chief	C. Gardner Warner, M.D.
Dental Surgeon-in-Chief, Acting	H. Glenn Waring, D.D.S.
Consultant in Psychiatry	Esther L. Richards, M.D.
Consultant in Peripheral Vascular Diseases	George H. Yeager, M.D.

Visiting Surgeons	James C. Owings, M.D. I. Ridgeway Trimble, M.D. Amos Koontz, M.D. Thurston R. Adams, M.D.
Consultant in Traumatic Surgery	C. A. Reifschneider, M.D.
Visiting Hand Surgeon	Raymond M. Curtis, M.D.
Assistant Visiting Surgeons	Harry C. Bowie, M.D. Donald B. Hebb, M.D. Henry L. Rigdon, M.D.
Visiting Neuro-Surgeons	Charles Bagley, M.D. Richard G. Coblentz, M.D. James G. Arnold, M.D.
Assistant Visiting Neuro-Surgeon	R. K. Thompson, M.D.
Consultants in Plastic Surgery	Edward A. Kitlowski, M.D. Edward M. Hanrahan, Jr., M.D.
Assistant Visiting Plastic Surgeon	Clarence P. Scarborough, M.D.
Visiting Urologists	W. Houston Toulson, M.D. Hugh Jewett, M.D.
Assistant Visiting Urologist	Howard B. Mays, M.D.
Visiting Gynecologists	J. Mason Hundley, Jr., M.D. Beverley C. Compton, M.D. John C. Dumler, M.D. John T. Hibbitts, M.D.
Assistant Visiting Gynecologists	Ernest I. Cornbrooks, Jr., M.D. William K. Diehl, M.D. Everett S. Diggs, M.D.
Visiting Proctologist	Monte Edwards, M.D.
Visiting Orthopaedic Surgeons	Allen F. Voshell, M.D. Henry F. Ullrich, M.D. Milton J. Wilder, M.D.
Visiting Laryngologists	John Bordley, M.D. Thomas R. O'Rourk, M.D. Fred T. Kyper, M.D.
Assistant Visiting Laryngologists	John H. Hirschfeld, M.D. Alfred T. Lieberman, M.D.
Visiting Ophthalmologist	Charles E. Iliff, Jr., M.D.
Visiting Oncologists	Grant E. Ward, M.D. Arthur G. Siwinski, M.D.
Visiting Anesthetists	Leonard Abramovitz, M.D. Alfred T. Nelson, M.D. Theodore Stacy, M.D.
Visiting Neuropathologist	John A. Wagner, M.D.
Assistant Chief Physician	Howard K. Rathbun, M.D.

Visiting Physicians	Louis A. M. Krause, M.D. Charles W. Judd, M.D. William G. Speed, III, M.D. Crawford N. Kirkpatrick, M.D.
Assistant Visiting Physicians	James R. McShane, M.D. George G. Schlesinger, M.D.
Assistant Visiting Physicians (USPHS)	Roger K. MacDonald, M.D. John H. Miller, M.D. David Solomon, M.D. Leroy E. Duncan, Jr., M.D.
Cardiologist (USPHS)	Benjamin Manchester, M.D.
Physiologist (USPHS)	Nathan W. Shock, Ph.D.
Visiting Neurologist	J. W. Magladery, M.D.
Assistant Visiting Neurologist	George G. Merrill, M.D.
Visiting Dermatologist, Acting	Raymond C. V. Robinson, M.D.
Visiting Laboratory Physician	Julius Waghelstein, M.D.
Visiting Pediatrician	Hans Bix, M.D.
Assistant Physician-in-Chief, Tuberculosis	Edmund G. Beacham, M.D.
Visiting Physician, Tuberculosis	Alvin S. Hartz, M.D.
Assistant Visiting Physician, Tuberculosis	John H. Hirschfeld, M.D.
Visiting Obstetrician	J. Morris Reese, M.D.
Assistant Visiting Obstetricians	D. Frank Kaltreider, M.D. John E. Savage, M.D. J. William Dorman, M.D. W. Newton Long, Jr., M.D. George W. Anderson, M.D. Louis C. Gareis, M.D.
Orthodontist	R. Kent Tongue, D.D.S.
Assistant Visiting Dental Surgeons	L. W. Bimestefer, D.D.S. Michael Varipatis, D.D.S. B. W. Misinski, D.D.S.

THE JAMES LAWRENCE KERNAN HOSPITAL AND INDUSTRIAL SCHOOL OF MARYLAND FOR CRIPPLED CHILDREN

STAFF, 1149–1950

Surgeon-in-Chief and Medical Director	Allen Fiske Voshell, A.B., M.D.
Consultant in Orthopaedic Surgery and Roentgenology	Albertus Cotton, A.M., M.D.
Associate Orthopaedic Surgeons	Moses Gellman, B.S., M.D. Harry Rogers, M.D. Henry F. Ullrich, M.D. Winthrop M. Phelps, A.B., M.D. Milton J. Wilder, M.D.

Roentgenologist	Charles N. Davidson, M.D.
Plastic Surgeon	Edward A. Kitlowski, A.B., M.D.
Aurist and Laryngologist	Benjamin S. Rich, A.B., M.D.
Dentist	M. E. Coberth, D.D.S.
Cardiologist	Helen M. Taussig, M.D.
Pediatrists	Melchijah Spragins, M.D.
Consulting Surgeon	Charles Reid Edwards, A.B., M.D.
Consulting Aurists and Laryngologists	Franklin B. Anderson, M.D. Edward A. Looper, M.D., D.Oph.
Consulting Neurological Surgeon	Charles Bagley, Jr., M.A., M.D.
Consulting Physician	Thomas R. Brown, A.B., M.D.
Consulting Dermatologists	Harry M. Robinson, Sr., M.D. Leon Ginsberg, M.D.
Consulting Neurologists	Irving J. Spear, M.D. R. V. Seliger, M.D.
Consulting Pediatrists	Benjamin Tappan, A.B., M.D. J. Edmund Bradley, M.D.
Consulting Dentist	Harry B. McCarthy, D.D.S.
Consulting Pathologist	Hugh R. Spencer, M.D.
Consulting Roentgenologist	Henry J. Walton, M.D.
Resident Orthopaedic Surgeons	Robert Abrams, M.D. A. Wesley Johnson, M.D. Francis Scholt, M.D.
Superintendent	Miss Maud M. Gardner, R.N.
Dispensary and Social Service Nurse	Mrs. Evelyn Byrd Zapf, R.N.
Physical Therapists and X-ray Technician	Miss Elizabeth Lane Miss Margaret Kennedy Mrs. Georgiana Wisong
Occupational Therapist	Miss Muriel Zimmerman, O.T.
Instructor in Grammar School	Miss Bertha Sendelback

HISTORY OF THE SCHOOL OF MEDICINE

The present School of Medicine, with the title University of Maryland School of Medicine and College of Physicians and Surgeons, is the result of a consolidation and merger of the University of Maryland School of Medicine with the Baltimore Medical College (1913) and the College of Physicians and Surgeons of Baltimore (1915).

Through the merger with the Baltimore Medical College, an institution of thirty-two years' growth, the facilities of the School of Medicine were enlarged in faculty, equipment and hospital connection.

The College of Physicians and Surgeons was incorporated in 1872, and established on Hanover Street in a building afterward known as the *Maternité*, the first obstetrical hospital in Maryland. In 1878 union was effected with the Washington University School of Medicine, in existence since 1827, and the college was removed to Calvert and Saratoga Streets. Through the consolidation with the College of Physicians and Surgeons, medical control of the teaching beds in the Mercy Hospital was obtained.

The School of Medicine of the University of Maryland is one of the oldest foundations for medical education in America, ranking fifth in point of age among the medical colleges of the United States. It was organized in 1807 and chartered in 1808 under the name of the College of Medicine of Maryland, and its first class was graduated in 1810. In 1812 the College was empowered by the Legislature to annex three other colleges or faculties: Divinity, Law, and Arts and Sciences; and the four colleges thus united were "constituted an University by the name and under the title of the University of Maryland."

The original building of the Medical School at the N. E. corner of Lombard and Greene Streets was erected in 1812. It is the oldest structure in this country from which the degree of doctor of medicine has been granted annually since its erection. In this building were founded one of the first medical libraries and one of the first medical school libraries in the United States.

At this Medical School dissection was made a compulsory part of the curriculum, and independent chairs for the teaching of gynecology and pediatrics (1867), and of ophthalmology and otology (1873), were installed for the first time in America.

This School of Medicine was one of the first to provide for adequate clinical instruction by the erection of its own hospital in 1823. In this hospital intramural residency for senior students was established for the first time.

The School of Medicine has been co-educational since 1918.

BUILDINGS AND FACILITIES

The original medical building at the N. E. corner of Lombard and Greene Streets houses the office of the Dean, Room 101, the office of the Committee on Admissions, Room 102, two lecture halls, the faculty room and office of the assistant business manager.

The Administration Building, to the east of the original building, contains the Baltimore offices of the Registrar and two lecture halls.

The laboratory building at 31 South Greene Street is occupied by the departments of Pathology, Bacteriology and Biochemistry.

The Frank C. Bressler Research Laboratory provides the departments of Anatomy, Histology and Embryology, Pharmacology, Physiology and Clinical Pathology with facilities for teaching and research. It also houses the research laboratories of the clinical departments, animal quarters, a laboratory for teaching Operative Surgery, a lecture hall and the Bressler Memorial Room.

This building was erected in 1939–1940 at 29 South Greene Street opposite the University Hospital. It was built with funds left to the School of Medicine by the late Frank C. Bressler, an alumnus, supplemented by a grant from the Federal government. The structure, in the shape of an I, extends east from Greene Street, just north of the original building.

MEDICAL LIBRARY

Howard Rovelstad, A.B., M.A., B.S.L.S. .... *Acting Director of Libraries*

Ida Marian Robinson, A.B., B.S.L.S. .... *Librarian*
Hilda E. Moore, A.B., A.B.L.S. .... *Assistant Librarian*
Florence R. Kirk .... *Assistant Librarian*
Edith R. McIntosh, A.M., A.B.L.S. .... *Cataloguer*
Charlotte Wilson .... *Assistant to the Cataloguer*

The Medical Library of the University of Maryland, founded in 1813 by the purchase of the collection of Dr. John Crawford, now numbers 31,000 volumes and several thousand pamphlets and reprints. Over four hundred of the leading medical journals, both foreign and domestic, are received regularly. The library is housed in Davidge Hall, a comfortable and commodious building in close proximity to classrooms and laboratories, and is open daily for the use of members of the faculty, the student body and the profession generally. Libraries pertaining to particular phases of medicine are maintained by several departments of the medical school.

The library of the Medical and Chirurgical Faculty of Maryland and the Welch Medical Library are open to students of the medical school without charge. Other libraries of Baltimore are the Peabody Library and the Enoch Pratt Free Library.

DISPENSARY BUILDING

The old hospital building has been remodeled and is occupied by the Out-patient Department. Thus the students have been provided with a splendidly appointed group of clinics for their training in out-patient work. All departments of clinical training are represented in this remodeled building and all changes have been predicated on the teaching function for which this department is intended.

The office of the Medical School Physician is located in this building.

The Department of Art also occupies quarters here.

UNIVERSITY HOSPITAL

The University Hospital, which is the property of the University of Maryland, is the oldest institution for the care of the sick in the state of Maryland. It was opened in September 1823, under the name of the Baltimore Infirmary, and at that time consisted of but four wards, one of which was reserved for patients with diseases of the eye.

In 1933–1934 the new University Hospital was erected and patients were admitted to this building in November 1934. The new hospital is situated at the southwest corner of Redwood and Greene Streets, and is consequently opposite the medical school buildings. The students, therefore, are in close proximity and little time is lost in passing from the lecture halls and laboratories to the clinical facilities of the new building.

This new building, with its modern planning, makes a particularly attractive teaching hospital and is a very valuable addition to the clinical facilities of the medical school.

The new hospital has a capacity of 435 beds and 65 bassinets devoted to general medicine, surgery, obstetrics, pediatrics, and the various medical and surgical specialties.

The teaching zone extends from the second to the eighth floor and comprises wards for surgery, medicine, obstetrics, pediatrics, and a large clinical lecture hall. There are approximately 270 beds available for teaching.

The space of the whole north wing of the second floor is occupied by the department of roentgenology. The east wing houses clinical pathology and special laboratories for clinical microscopy, biochemistry, bacteriology, and an especially well appointed laboratory for students' training. The south wing provides space for electro-cardiographic and basal metabolism departments, with new and very attractive air-conditioned or oxygen therapy cubicles. The west wing contains the departments of rhinolaryngology and bronchoscopy, industrial surgery, ophthalmology, and male and female cystoscopy.

The third and fourth floors each provide two medical and two surgical wards. The fifth floor contains two wards for pediatrics, and on the sixth floor there are two wards for obstetrics. Each ward occupies the space of one wing of the hospital.

On the seventh floor is the general operating suite, the delivery suite, and the central supply station. The eighth floor is essentially a students' floor and affords a mezzanine over the operating and delivery suites, and a students' entrance to the clinical lecture hall.

In the basement there is a very well appointed pathological department with a large teaching autopsy room and its adjunct service of instruction of students in pathological anatomy.

The hospital receives a large number of accident patients because of its proximity to the largest manufacturing and shipping districts of the city.

The obstetrical service is particularly well arranged and provides accommodation for forty ward patients. This service, combined with an extensive home service, assures the student abundant obstetrical training.

During the year ending December 31. 1948, 2427 cases were delivered in the hospital and 632 cases in the outdoor department. Students in the graduating class observed at least thirty-five cases, each student being required to deliver at least eight patients in their homes.

The dispensaries associated with the University Hospital and the Mercy Hospital are organized upon a uniform plan in order that the teaching may be the same in each. Each dispensary has the following departments: medicine, surgery, pediatrics, ophthalmology, otology, genito-urinary, gynecology, gastroenterology, neurology, orthopaedics, proctology, dermatology, laryngology, rhinology, cardiology, tuberculosis, psychiatry, oral surgery and oncology.

All students in their junior year work each day during one-third of the year in the departments of medicine and surgery of the dispensaries. In their senior year, all students work one hour each day in the special departments.

MERCY HOSPITAL

The Sisters of Mercy first assumed charge of the Hospital at the corner of Calvert and Saratoga Streets, then owned by the Washington University, in 1874. By the merger of 1878 the Hospital came under the control of the College of Physicians and Surgeons, but the Sisters continued their work of ministering to the patients.

In a very few years it became apparent that the City Hospital, as it was then called, was much too small to accommodate the rapidly growing demands upon it. However, it was not until 1888 that the Sisters of Mercy, with the assistance of the Faculty of the College of Physicians and Surgeons, were able to lay the cornerstone of the present hospital. This building was completed and occupied late in 1889. Since then the growing demands for more space have compelled the erection of additions, until now there are accommodations for 348 patients.

In 1909 the name was changed from The Baltimore City Hospital to Mercy Hospital.

The clinical material in the free wards is under the exclusive control of the Faculty of the University of Maryland School of Medicine and College of Physicians and Surgeons.

THE BALTIMORE CITY HOSPITALS

The clinical facilities of the School of Medicine have been largely increased by the liberal decision of the Department of Public Welfare to allow the use of the wards of these hospitals for medical education. The autopsy material also is available for student instruction.

Members of the junior class make daily visits to these hospitals for clinical instruction in medicine, surgery, and the specialties.

The Baltimore City Hospitals consist of the following separate divisions:

The General Hospital, 400 beds, 90 bassinets.
The Hospital for Chronic Cases, 575 beds.
The Hospital for Tuberculosis, 280 beds.
Infirmary (Home for Aged) 700 beds.

THE JAMES LAWRENCE KERNAN HOSPITAL AND INDUSTRIAL SCHOOL OF MARYLAND FOR CRIPPLED CHILDREN

This institution is situated on an estate of 75 acres at Dickeyville. The site is within the northwestern city limits and of easy access to the city proper.

The location is ideal for the treatment of children, in that it affords all the advantages of sunshine and country air.

A hospital unit, complete in every respect, offers all modern facilities for the care of any orthopaedic condition in children.

The hospital is equipped with 80 beds—endowed, and city and state supported.

The orthopaedic dispensary at the University Hospital is maintained in closest affiliation and cares for the cases discharged from the Kernan Hospital. The physical therapy department is very well equipped with modern apparatus and trained personnel. Occupational therapy has been fully established and developed under trained technicians.

THE BALTIMORE EYE, EAR, AND THROAT HOSPITAL

This institution was first organized and operated in 1882 as an outgrowth of the Baltimore Eye and Ear Dispensary, which closed on June 14, 1882. The name then given to the new hospital was The Baltimore Eye and Ear Charity Hospital. It was located at the address now known as 625 W. Franklin St. The out-patient department was opened on September 18, 1882 and the hospital proper on November 1 of the same year. In 1898 a new building afforded 24 free beds and 8 private rooms; by 1907 the beds numbered 47; at present there are 60 beds, 29 of which are free. In 1922 the present hospital building at 1214 Eutaw Place was secured and in 1926 the dispensary was opened. In 1928 a clinical laboratory was installed. During 1948 the out-patient visits numbered 22,058.

Through the kindness of the Hospital Board and Staff, our junior students have access to the dispensary which they visit in small groups for instruction in ophthalmology.

REQUIREMENTS FOR ADMISSION

METHOD OF MAKING APPLICATION

Requests for application forms should be filed not earlier than September 15th preceding by one year the desired date of admission. These forms may be secured from the Committee on Admissions, School of Medicine, University of Maryland, Baltimore 1, Maryland.

APPLICATION FOR ADMISSION TO THE FIRST YEAR

Application for admission is made by filing the required form and by having all pertinent data sent directly to the Committee on Admissions, in accordance with the instructions accompanying the application.

Consideration will be given applications received after December 1st provided the class is not complete.

APPLICATION FOR ADMISSION TO ADVANCED STANDING

Students who have attended approved medical schools are eligible to file applications for admission to the second- and third-year classes only. These applicants must be prepared to meet the current first-year entrance requirements in addition to presenting acceptable medical school credentials, and a medical school record based on courses which are quantitatively and qualitatively equivalent to similar courses in this school.

Application to advanced standing is made in accordance with the instructions accompanying the application form.

Persons who already hold the degree of Doctor of Medicine will not be admitted to the Medical School as a candidate for that degree from this university.

MINIMUM REQUIREMENTS FOR ADMISSION

The minimum requirements for admission to the School of Medicine are:

(a) Graduation from an approved secondary school, or the equivalent in entrance examinations, and

(b) Three academic years of acceptable college credit, exclusive of physical education and military sciences, earned in colleges of arts and sciences which are currently approved by the Council on Medical Education and Hospitals of the American Medical Association. The quantity and quality of this course of study shall be equivalent to that required for recommendation by the institution where the college courses are being, or have been, pursued.

(c) The following courses and credits in basic required subjects must be completed by June of the year the applicant desires to be admitted:

	Semester hours	*Quarter hours*
General biology or zoology	8	12
Inorganic chemistry	8	12
Organic chemistry	6–8	9–12
General physics	8	12
English	6	9
Modern language (German, French, Spanish)	6	9

(d) The total semester-hour or quarter-hour credits presented must be equivalent in quantity and quality to three-fourths of the credit requirement for graduation by the recommending institution, exclusive of courses in physical education and military sciences.

Applicants who are unable to complete these requirements by June of the year admission is desired, will be considered contingent on places being available, provided all basic required courses and credits shall have been absolved by June as indicated in (c) above.

(e) Students who are conditioned in college courses are not accepted.

Elective courses should be selected from the following three groups:

Humanities	*Natural Sciences*	*Social Sciences*
English (an advanced course in English composition should be taken, if possible)	Vertebrate Embryology	Economics
Scientific German or French (A reading knowledge of either language is desirable, although German is preferred)	Comparative Vertebrate Anatomy	History
Philosophy	Quantitative Analysis	Political Science
	Physical Chemistry	Psychology (a basic course is desirable)
	Mathematics	Sociology, etc.

Careful attention should be given to the selection of elective courses in the natural sciences. Accordingly, it is suggested that the elective list given above be a guide in this connection and that the remainder of the college credits be accumulated from courses designed to promote a broad cultural development. Students should avoid the inclusion of college courses in subjects that occur in the medical curriculum, for example, histology, histological technique, human anatomy, bacteriology, physiology, neurology, physiological chemistry.

It is not intended that these suggestions be interpreted to restrict the education of students who exhibit an aptitude for the natural sciences or to limit the development of students who plan to follow research work in the field of medicine.

In accepting candidates for admission, preference will be given to those applicants who have acceptable scholastic records in secondary school and college, satisfactory scores in the Medical College Admission Test, favorable letters of recommendation from their premedical committees, or from one instructor in each of the departments of biology, chemistry, and physics, and who in all other respects give every promise of becoming successful students and physicians of high standing.

Those candidates for admission who are unconditionally accepted will receive a certificate of matriculation from the office of the Dean.

COMBINED COURSE IN ARTS AND SCIENCES AND MEDICINE

A combined seven years' curriculum leading to the degrees of Bachelor of Science and Doctor of Medicine is offered by the University of Maryland. The first three years are taken in residence in the College of Arts and Sciences at College Park, and the last four years in the School of Medicine in Baltimore. (See University catalogue for details of quantitative and qualitative college course requirements.)

If a candidate for the combined degree completes the work of the first year in the School of Medicine with an average of "C" without failures, and if he has absolved the quantitative and qualitative college requirements set up by the University, he is eligible to recommendation by the Dean of the School of Medicine that the degree of Bachelor of Science be conferred.

Because the general commencement usually takes place before the School of Medicine is prepared to release grades of the first-year class, this combined degree of Bachelor of Science is conferred at the commencement following the candidate's second year of residence in the School of Medicine.

STATE MEDICAL STUDENT QUALIFYING CERTIFICATES

Candidates for admission who live in or expect to practice medicine in Pennsylvania, New Jersey or New York, should apply to their respective state boards of education for medical student qualifying certificates (Pennsylvania and New Jersey) or approval of applications for medical student qualifying certificates (New York).

Those students who are accepted must file satisfactory State certificates in the office of the Committee on Admissions, School of Medicine, before registration. No exceptions will be made to this requirement.

Addresses of the State Certifying Offices

Director of Credentials Section, Pennsylvania Department of Public Instruction, Harrisburg, Pa.

Chief of the Bureau of Credentials, New Jersey Department of Public Instruction, Trenton, N. J.

Supervisor of Qualifying Certificates, The State Education Department, Examinations and Inspections Division, Albany, N. Y.

DEFINITION OF RESIDENCE STATUS OF STUDENTS*

Students who are minors are considered to be resident students if, at the time of their registration, the parents* have been residents of this State for at least one year.

Adult students are considered to be resident students if, at the time of their registration, they have been residents of this State for at least one year, provided such residence has not been acquired while attending any school or college in Maryland.

The status of the residence of a student is determined at the time of his first registration in the university and may not thereafter be changed by him unless, in the case of a minor, his parents* move to and become legal residents of this state by maintaining such residence for at least one full calendar year. However, the right of the student (minor) to change from a non-resident to a resident status must be established by him prior to registration for a semester in any academic year.

---

* The term "parents" includes persons who have been legally constituted the guardians of or stand in loco parentis to such minor students.

CURRENT FEES

Matriculation fee (paid once)	$10.00
Tuition fee (each year)—Residents of Maryland	450.00
Tuition fee (each year)—Non-Residents	600.00
Laboratory fee (each year)	25.00
Student health service fee (each year)	20.00
Student activities and service fee (each year)	15.00
*Lodging and meals fee	6.75
Graduation fee	15.00
Re-examination fee (each subject)	5.00
Transcript fee to graduates. First copy gratis, each copy thereafter	1.00

RULES FOR PAYMENT OF FEES

No fees are returnable.

Make all checks or money orders payable to the "University of Maryland".

When offering checks or money orders in payment of tuition and other fees, students are requested to have them drawn in the exact amount of such fees. Personal checks whose face value is in excess of the fees due will be accepted for collection only.

Acceptance.—Payment of the matriculation fee of $10.00 and of a deposit on tuition of $50.00 is required of accepted applicants before the expiration date specified in the offer of acceptance. This $60.00 deposit is not returnable and will be forfeited if the applicant fails to register, or it will be applied to the applicant's first semester's charges on registration.

Registration.—All students, after proper certification, are required to register at the business office, Gray Laboratory. (See calendar page 5 of this bulletin for dates for the payments of fees, and the note regarding late registration fee.)

One-half of the tuition fee, the laboratory fee, the student health fee, the maintenance and service fee and the student activities fee are payable on the date specified for registration for the first semester.

The remainder of the tuition fee shall be paid on the date designated for the payment of fees for the second semester. Fourth year students shall pay the graduation fee, in addition, at this time.

PENALTY FOR NON-PAYMENT OF FEES

If semester fees are not paid in full on the specified registration dates, a penalty of $5.00 will be added.

If a satisfactory settlement, or an agreement for settlement, is not made with the business office within ten days after a payment is due, the student automatically is debarred from attendance on classes and will forfeit the other privileges of the School of Medicine.

---

* Junior Students will be billed for this fee, covering lodging and meals while on obstetrical service at Baltimore City Hospitals. Accordingly, Section B. on Schedule 2 will be billed for the first semester; Section A on Schedule 2 for the second semester.

REEXAMINATION FEE

A student who is eligible to reexaminations must pay the business office $5.00 for each subject in which he is to be examined, and he must present the receipt to the faculty member giving the examination before he will be permitted to take the examination.

STUDENT ACTIVITIES AND SERVICE FEE

This fee pays for the use of clothing lockers, provides library privileges, maintains student loan collections, a student lounge and cafeteria. It supports a recreational program for students of all classes, provides photographs for all school purposes, including state boards, and furnishes graduates with invitations and tickets to the Pre-commencement Exercises. It supports the activities of the Student Council.

STUDENT HEALTH SERVICE

James R. Karns, M.D. .... Director, Student Health Service.

The Medical School has made provision for the systematic care of students according to the following plan:

1. *Preliminary Examination*—All new students will be examined during the first week of the semester. Notice of the date, time, and place of the examination will be announced to the classes and on the bulletin board. The passing of this physical examination is necessary before final acceptance of any student.
2. *Medical Attention*—Students in need of medical attention will be seen by the school physician, Dr. James R. Karns, in his office at the medical school, at 9 A.M. daily, except Saturday and Sunday. In case of necessity, students will be seen at their homes.
3. *Hospitalization*—If it becomes necessary for any student to enter the hospital during the school year, the school has arranged for the payment of part or all of his hospital expenses, depending on the length of his stay and special expenses incurred. This applies only to students admitted through the school physician's office.
4. *Physical Defects*—Prospective students are advised to have any known physical defects corrected before entering school in order to prevent loss of time which later correction might incur.
5. *Eye Examination*—Each new matriculate is required to undergo an eye examination at the hands of an oculist (Doctor of Medicine) within three months before entering the School of Medicine. Long study hours bring out unsuspected eye defects which cause much loss of time and inefficiency in study if not corrected until after school work is under way.
6. *Limitations*—It is not the function of this service to treat chronic conditions contracted by students before admission, nor to extend treatment to acute conditions arising in the period between academic years, unless the school physician recommends this service.

GENERAL RULES

The right is reserved to make changes in the curriculum, the requirements for graduation, the fees and in any of the regulations whenever the university authorities deem it expedient. Students are urged, therefore, to read the latest issue of the catalogue and follow the rules set forth therein.

GRADING SYSTEM

Official grades are designated by these symbols:

Symbol	*Scholarship*	*Numerical Equivalent*
A	Superior	93–100
B	Good	87– 92
C	Fair	80– 86
D	Passing	75– 79
F	Failure	Below 75
I	Incomplete	—
WF	Withdrew, failing	—

The class standing of seniors only will be released. This standing will appear on senior grade reports sent out from the Registrar's office.

ADVANCEMENT AND GRADUATION

1. No medical student will be permitted to begin work for credit in any semester of any year who reports for classes later than one week after classes begin, except by permission of the Dean.
2. No student will be permitted to advance with unabsolved failures.
3. A general scholastic average of C is required for advancement to junior and senior standing and for graduation.
4. A student who in any one year has one failure together with grades of D in all other subjects, will be dropped from the rolls.
5. A student who has failures in two completed major subjects will be dropped from the rolls.
6. All students are required to attend 85% of scheduled classes and take spring examinations unless excused by the Dean.
7. Should a student be required to repeat any year in any course, he must pay regular fees.
8. A student failing his final examinations for graduation at the end of the fourth year will be required to repeat the entire course of the fourth year and take examinations in such other branches as may be required, provided he is permitted to enter the school as a candidate for graduation.
9. The general fitness of a candidate for graduation as well as the results of his examinations will be taken into consideration by the faculty.

EQUIPMENT

10. At the beginning of the first year, all students must be prepared to provide microscopes of a satisfactory type equipped with a mechanical stage and a substage lamp.

A standard microscope of either Bausch & Lomb, Leitz, Spencer, or Zeiss make, fitted with the following attachments, will meet the requirements:

16 mm., 10x, 0.25 N.A.—4.9 mm. working distance.
4 mm., 43x, 0.65 N.A.—0.6 mm. working distance.
1.8 mm., 97x, oil immersion, 1.25 N.A.—0.13 mm. working distance.
Oculars: 10x and 5x. Huygenian eyepieces.
Triple nose pieces with 16 mm., 4 mm., and 1.9 mm. 125 N.A. oil immersion lens.

Wide aperture stage with quick screw condenser and built on, but detachable, ungraduated mechanical stage. Substage condenser, variable focusing type 1.25 N.A. with iris diaphragm. A rack and pinion focusing device is preferred. Mirror plane on one side, concave on the other. A carrying case is recommended.

Students are cautioned with respect to the purchase of used microscopes since some older instruments were equipped with a 4 mm. (high dry) objective whose N.A. is marked as 0.85 N.A. This objective has such a short working distance (0.3 mm.) that it is difficult or impossible to focus through thick cover glasses or the standard haemocytometer cover glass without breakage. All used microscopes are subject to inspection and approval by the department.

11. Students in the second year class are required to provide stethoscopes.

12. Third- and fourth-year students are required to provide haemocytometers, opthalmoscopes and otoscopes.

STATE QUALIFYING CERTIFICATES

13. Candidates for admission who live in or expect to practice medicine in Pennsylvania, New Jersey or New York must file State qualifying certificates in the office of the Committee on Admissions, School of Medicine, before registration. No exception will be made to this rule.

EYE EXAMINATION BEFORE ADMISSION

14. Each new matriculate in each class is required to present to the Committee on Admissions a certificate from an oculist, (a graduate in medicine) that the matriculate's eyes have been examined and are in condition, with or without glasses as the case may be, to endure the strain of close and intensive reading.

It is required that this examination be completed within three months prior to registration and that the certificate be mailed to the Committee on Admissions not later than one month before registration.

AWARDING OF COMBINED DEGREES

15. Students entering the School of Medicine on a three-year requirement basis from colleges which usually grant a degree on the successful completion of the first year of medicine, are restricted by the following regulations:

a—The candidate must present a certificate from his college or university that he has absolved the quantitative and qualitative premedical requirements for this degree.

b—The candidate must acquire an average of "C" without failures for the work of his first year in the School of Medicine.

c—The Dean of the School of Medicine reserves the right to withhold his recommendation that a bachelor's degree be conferred at a commencement which occurs before the official release of first-year medical grades.

COST OF TRANSCRIPTS

16. Graduates will receive the first transcript of record without charge. Subsequent copies will cost one dollar each. Requests for transcripts must be filed with the Registrar's Office, University of Maryland, Lombard and Greene Streets, Baltimore-1, Maryland.

HOUSING

There are no housing or living accommodations on the campus of the medical school.

PARKING

Because of lack of space on the university parking lots no parking facilities are provided thereon for students.

LIBRARY REGULATIONS

Loan Regulations

Loan periods have been worked out according to demand for and protection of different types of material.

Two-Week Loans: All books except those on reserve.

Three-Day Loans: All journals except the latest number (which does not circulate), and those on reserve.

Overnight Loans: Books and journals on reserve.
(4 p.m.–10 a.m.)

Special Rules or Books on Reserve:

Students whose names appear on the check-list for the Mercy Hospital section will be granted the necessary hours to return reserve books.

Overnight books may be reserved in advance only within the week in which they will be used. Books may be reserved on Saturday for the following Monday.

Overnight books may not be reserved two successive nights by the same person.

Advance reserves will be held until one hour before closing.

Fines

Fines are imposed not to acquire money, but to assure equal access to books.

Two-Week Loans: 5¢ per day.

Three-Day Loans: 5¢ per day.

Overnight Loans: 5¢ per hour.

Lost Books: List price of the book. (Lost books should be reported at once)

All books must be returned, lost books replaced or paid for, and fines paid before a student can finish the year in good standing.

In fairness to all concerned, these rules must be enforced without exception.

CERTIFICATION FOR STATE BOARD AND NATIONAL BOARD EXAMINATIONS

No student will be certified to State Board or National Board examiners who has unabsolved failures in subjects taken during the academic period covered by these examinations.

WITHDRAWALS AND REFUNDS

Formal Withdrawal Procedures

Students over 21 years of age desiring to leave the School of Medicine at any time during the academic year are required to file with the Dean a written application for withdrawal. In addition, the student must secure an "honorable dismissal release" form from the Dean's secretary, and return this to the Dean's office appropriately signed by representatives of the departments listed thereon, together with his "matriculation certificate."

If these procedures are not completed, the student will not be entitled to honorable dismissal nor to refund of fees.

Students under 21 years of age, must supplement the procedures previously described with the written consent of their parents or guardians.

Academic Standing On Withdrawal

Students who voluntarily withdraw during an academic semester will be given no credit.

Students are not permitted to resort to withdrawal in order to preclude current or impending failures. Their standing on withdrawal will be recorded in the registrar's office.

Students who withdraw from the School of Medicine, must apply to the Committee on Admissions for readmission, unless other arrangements have been consummated with the Dean's written consent.

Refunds on Withdrawal

Students who are eligible to honorable dismissal will receive a refund of current charges, after the matriculation fee has been deducted, according to the following schedule:

Period elapsed after instruction begins.	*Percentage refundable*
Two weeks or less	80%
Between two and three weeks	60%
Between three and four weeks	40%
Between four and five weeks	20%
After five weeks	0

PRIZES

THE FACULTY PRIZE

The faculty will award the gold medal and certificate and five certificates of honor to those six of the first ten highest ranking candidates for graduation who, during the four academic years, have exhibited outstanding qualifications for the practice of medicine.

THE DR. A. BRADLEY GAITHER MEMORIAL PRIZE

A prize of $25.00 is given each year by Mrs. A. Bradley Gaither as a memorial to the late Dr. A. Bradley Gaither, to the student in the senior class doing the best work in genito-urinary surgery.

THE WILLIAM D. WOLFE MEMORIAL PRIZE

(Value $100.00 each)

A certificate of proficiency and a prize of $100.00 will be awarded each year until the fund is dissipated, to the graduate selected by the Faculty Board showing greatest proficiency in Dermatology.

SCHOLARSHIPS

All scholarships are assigned for one academic year, unless specifically reawarded on consideration of an application.

Official application forms are obtainable at the Dean's office, where they should be filed four months before the ensuing academic year.

THE DR. SAMUEL LEON FRANK SCHOLARSHIP

(Value $100.00)

This scholarship was established by Mrs. Bertha Rayner Frank as a memorial to the late Dr. Samuel Leon Frank, an alumnus of this university.

It is awarded by the Trustees of the Endowment Fund of the University each year upon nomination by the Faculty Board "to a medical student of the University of Maryland, who in the judgment of said Council, is of good character and in need of pecuniary assistance to continue his medical course."

This scholarship is awarded to a second, third or fourth year student who has successfully completed one year's work in this school. No student may hold this scholarship for more than two years.

THE CHARLES M. HITCHCOCK SCHOLARSHIPS

(Value $100.00 each)

Two scholarships were established from a bequest to the School of Medicine by the late Charles M. Hitchcock, M.D., an alumnus of the university.

These scholarships are awarded annually by the Trustees of the Endowment Fund of the University, upon nomination by the Faculty Board, to students who have meritoriously completed the work of at least the first year of the course in medicine, and who present to the Board satisfactory evidence of a good moral character and of inability to continue the course without pecuniary assistance.

THE RANDOLPH WINSLOW SCHOLARSHIP

(Value $100.00)

This scholarship was established by the late Randolph Winslow, M.D., LL.D.

It is awarded annually by the Trustees of the Endowment Fund of the University, upon nomination by the Faculty Board, to a "needy student of the Senior, Junior, or Sophomore Class of the Medical School."

"He must have maintained an average grade of 85% in all his work up to the time of awarding the scholarship."

"He must be a person of good character and must satisfy the Faculty Board that he is worthy of and in need of assistance."

THE DR. LEO KARLINSKY MEMORIAL SCHOLARSHIP

(Value $125.00)

This scholarship was established by Mrs. Ray Mintz Karlinsky as a memorial to her husband, the late Dr. Leo Karlinsky, an alumnus of the university.

It is awarded annually by the Trustees of the Endowment Fund of the University, upon the nomination of the Faculty Board, to "a needy student of the Senior, Junior or Sophomore Class of the Medical School."

He must have maintained in all his work up to the time of awarding the scholarship a satisfactory grade of scholarship.

He must be a person of good character and must satisfy the Faculty Board that he is worthy of and in need of assistance.

THE UNIVERSITY SCHOLARSHIP

A scholarship which entitles the holder to exemption from payment of tuition fee for the year, is awarded annually by the Faculty Board to a student of the senior class in need of assistance who presents to the Faculty Board satisfactory evidence of good character and scholarship.

THE FREDERICA GEHRMANN SCHOLARSHIP

(Value $200.00)

(Not open to holders of Warfield and Cohen Scholarships)

This scholarship was established by the bequest of the late Mrs. Frederica Gehrmann and is awarded to a third-year student who at the end of the second year has passed the best practical examinations in physiology, pharmacology, pathology, bacteriology, immunology, serology, surgical anatomy and neuroanatomy.

THE CLARENCE AND GENEVRA WARFIELD SCHOLARSHIPS

(Value $300.00 each)

There are five scholarships established by the regents from the income of the fund bequeathed by the will of Dr. Clarence Warfield.

Terms and Conditions: These scholarships are available to students of any of the classes of the course in medicine. Preference is given to students from the counties of the state of Maryland which the Faculty Board may from time to time determine to be most in need of medical practitioners.

Any student receiving one of these scholarships must agree, after graduation and a year's internship, to undertake the practice of medicine, for a term of two years, in the county to which the student is accredited, or in a county selected by the Board. In the event that a student is not able to comply with the condition requiring him to practice in the county to which he is accredited by the Board, the money advanced by the regents shall be refunded by the student.

THE ISRAEL AND CECELIA E. COHEN SCHOLARSHIP

(Value $150.00)

This scholarship was established by the late Eleanor S. Cohen in memory of her parents, Israel and Cecelia E. Cohen. Terms and conditions: This scholarship will be available to students of any one of the classes of the course in medicine; preference is given to students of the counties in the state of Maryland which the Faculty Board may from time to time determine to be most in need of medical practitioners. Any student receiving one of these scholarships must, after graduation and a year's internship, agree to undertake the practice of medicine for a term of two years in the county to which the student is accredited, or in a county selected by the council. In the event that a student is not able to comply with the condition requiring him to practice in the county to which he is accredited by the Board, the money advanced by the regents shall be refunded.

THE DR. HORACE BRUCE HETRICK SCHOLARSHIP

(Value $125.00)

This scholarship was established by Dr. Horace Bruce Hetrick as a memorial to his sons, Bruce Hayward Hetrick and Augustus Christian Hetrick. It is to be awarded by the Faculty Board to a student of the senior class.

THE HENRY ROLANDO SCHOLARSHIP

(Value approximately $250.00)

The Henry Rolando Scholarship was established by the Board of Regents of the University of Maryland from a bequest to the Board by the late Anne H. Rolando for the use of the Faculty of Medicine.

This scholarship will be awarded each academic year on the recommendation of the Faculty Board to a "poor and deserving student."

THE READ SCHOLARSHIPS

The sum of $500.00 is now available to cover two (2) scholarships in the amount of $250.00 each for the scholastic year, beginning in 1945, as a donation from the Read Drug and Chemical Company of Baltimore, Maryland. Two students are to be selected by the Dean of the School in collaboration with the Scholarship and Loan Committee of the Medical School with the provision that the students selected shall be worthy, deserving students, residents of the State of Maryland.

LOAN FUNDS

W. K. KELLOGG FUND

This loan fund was established in the academic year 1942 with money granted by the W. K. Kellogg Foundation. The interest paid on the loans, together with the principal of the fund as repaid, will be used to found a rotating loan fund. Loans will be made on the basis of need, character and scholastic attainment.

FACULTY OF MEDICINE LOAN FUND

A Faculty of Medicine Loan Fund was established with money derived from the bequest of Dr. William R. Sanderson, Class 1882, and the gift of Dr. Albert Stein, Class 1907. Loans will be made on the basis of need, character, and scholastic ability.

THE JAY W. EATON LOAN FUND

This fund was established by the local chapter of the Nu Sigma Nu Fraternity in memory of Jay W. Eaton of the class of 1946.

Beginning in 1946 an interest-free loan of $100.00 will be made to some worthy member of the senior class, on recommendation of the Scholarship Committee of the School of Medicine. This loan is to be credited to the tuition fee of the appointed student and is to be repaid by the student within four years following his graduation.

THE SENIOR CLASS LOAN FUND

The senior class of 1945 originated this fund which will accumulate by subscription from among members of each senior class.

The conditions of the agreement provide that the dean of the School of Medicine award a loan of $100.00 to a needy member of the senior class on the recommendation of a self-perpetuating committee of two members of the faculty.

Loans from this fund are to be credited to the tuition fee of the appointed student and are to be repaid within five years from the date of graduation.

THE STUDENT AID FUND FOR SENIORS

This fund was originated by the class of 1950 and is sponsored by the senior class of each succeeding year. The purpose of the fund is to provide financial aid for any deserving member of the senior class. All members of the senior class are eligible to apply for a loan. Applications may be filed at the office of the dean.

The conditions of the agreement provide that the Scholarship and Loan Committee award loans to members of the senior class on recommendation of a self-perpetuating committee of two members of the faculty who may call on the president of the senior class for assistance, if desired.

Loans from this fund are made on a non-interest bearing basis and are payable within five years. A signed note is required. No co-signers are necessary.

ORGANIZATION OF THE CURRICULUM

The curriculum is organized under thirteen departments.

1. Anatomy.
2. Physiology.
3. Bacteriology and Immunology.
4. Biological Chemistry.
5. Pharmacology and Materia Medica.
6. Pathology.
7. Medicine (including Medical Specialties).
8. Surgery (including Surgical Specialties).
9. Obstetrics.
10. Gynecology.
11. Ophthalmology.
12. Roentgenology.

13. Anaesthesiology.
14. Psychiatry.
15. Pediatrics.

The instruction is given in four academic years of graded work.

Several courses of study extend through two years or more, but in no case are the students of different years thrown together in the same course of teaching.

The first and second years are devoted largely to the study of the structures, functions and chemistry of the normal body. Laboratory work occupies most of the student's time during these two years.

Some introductory instruction in medicine and surgery is given in the second year. The third and fourth years are almost entirely clinical.

A special feature of instruction in the school is the attempt to bring together teacher and student in close personal relationship. In many courses of instruction the classes are divided into small groups and a large number of instructors insures attention to the requirements of each student.

In most courses the final examination as the sole test of proficiency has disappeared and the student's final grade is determined largely by partial examinations, recitations and assigned work carried on throughout the course.

DEPARTMENT OF ANATOMY

Eduard Uhlenhuth	Professor of Anatomy, and Head of the Department
Frank H. J. Figge	Professor of Anatomy
O. G. Harne	Associate Professor of Anatomy
Vernon E. Krahl	Associate Professor of Anatomy
R. Dale Smith	Associate Professor of Anatomy
John F. Lutz	Assistant Professor of Anatomy
Karl F. Mech	Associate in Anatomy
V. V. Brunst	Research Associate
Geraldine F. Wolfe	U.S.P.H. Fellow
Russell L. Christopher	Weaver Fellow in Anatomy[1]
Dewitt T. Hunter	Weaver Fellow in Anatomy[1]
William E. Loechel	Fellow in Anatomy[1a]
Otto C. Brantigan	Professor of Surgical Anatomy
W. Wallace Walker	Associate Professor of Surgical Anatomy
William B. Settle	Assistant Professor of Surgical Anatomy
Herbert E. Reifschneider	Associate in Surgical Anatomy
Henry L. Rigdon	Associate in Surgical Anatomy
Harry C. Bowie	Instructor in Surgical Anatomy
Ross Z. Pierpont	Instructor in Surgical Anatomy

Gross Anatomy. *First Year.* First semester. The gross structure of the human body, studied by dissection of the human cadaver. The entire human body is dissected. Approximately 390 hours; of these 88 hours are devoted to lectures and conferences, the rest to laboratory work and demonstrations. Drs. Uhlenhuth, Krahl, Smith and Mech.

First Year. First Semester. Peripheral Nervous System. A lecture course of approximately 32 hours, in two-hour periods each Saturday morning. Dr. Uhlenhuth.

---

[1] June 1st to August 31st, 1949.

[1a] July 1 to Aug. 31, 1949.

First Year. First Semester. The Microscopic Structure of the Organs, Tissues and Cells of the Human Body.

This course will present an integrated study of the histology and embryology of the human body. While much of the time is devoted to the study of fixed and stained non-living tissues and organs, the development of a concept of the dynamic and functional aspects of living cells and organs is the primary goal of the course. 150 hours. Dr. Figge, Prof. Harne and Dr. Lutz.

First Year. Second Semester. The Central Nervous System. The study of the detailed anatomy of the central nervous system will be coordinated with the structure and function of the entire nervous system. This study will require the dissection of a human brain and the examination of stained microscopic sections of various levels of the brain stem. 100 hours. Dr. Figge, Prof. Harne, Dr. Lutz.

Second Year. Second Semester. Topographic and Surgical Anatomy. The course is designed to bridge the gap between abstract anatomy and clinical anatomy as applied to the study and practice of medicine and surgery. Students are required to dissect and demonstrate all points, outlines and regions of the cadaver. Underlying regions are dissected to bring out outlines and relations of structures. Dr. Brantigan and staff.

Total hours: 96

Graduate and Postgraduate Courses. Consult the general catalog of the University of Maryland for descriptions of these courses.

DEPARTMENT OF PHYSIOLOGY

William R. Amberson	Professor of Physiology, and Head of the Department
Dietrich Conrad Smith	Professor of Physiology
Frederick P. Ferguson	Assistant Professor of Physiology
Sylvia Himmelfarb	Assistant in Physiology
Frances C. Brown	Assistant in Physiology
Raymond F. Kline	Porter Fellow in Physiology

The work in physiology is given in two separate courses:

First Year. Second Semester. A course in neuro-muscular physiology is presented in two lectures a week, without laboratory work.

Second Year. First Semester. The remainder of the subject is presented in four lectures, one conference, and two laboratory periods a week.

The fundamental concepts of physiology are presented with special reference to mammalian problems.

Total hours: 224.

Graduate Courses. Consult the catalogue of the Graduate School for descriptions of the graduate courses offered by members of the staff.

DEPARTMENT OF BACTERIOLOGY AND IMMUNOLOGY

Frank W. Hachtel	Professor of Bacteriology and Head of the Department
Edward Steers	Associate Professor of Bacteriology

Andrew G. Smith	Assistant Professor of Bacteriology
H. Edmund Levin	Associate in Bacteriology
Hazel Y. Pruitt	Assistant in Bacteriology

Second Year. First Semester. The principles of general bacteriology are taught by quiz, conference, and lecture.

Instruction given in the laboratory includes the methods of preparation of culture media, the study of pathogenic bacteria, and the bacteriological examination of water and milk. The bacteriological diagnosis of communicable diseases is also included.

Second Year. Second Semester. The principles of immunology are presented by means of quizzes, conferences and lectures.

The course includes a consideration of infection and immunity, the nature and action of the various antibodies, complement fixation and flocculation tests, hypersensitiveness, and the preparation of bacterial vaccines.

Experiments are carried out by the class in the laboratory. During the latter half of the semester the class is divided into sections.

Total hours: Bacteriology 120.
Immunology 72.

Graduate Courses. Consult the catalogue of the Graduate School for descriptions of the graduate courses offered by members of the staff.

DEPARTMENT OF BIOLOGICAL CHEMISTRY

Emil G. Schmidt	Professor of Biological Chemistry and Head of the Department
Edward J. Herbst	Assistant Professor of Biological Chemistry
William H. Summerson	Lecturer in Biological Chemistry
Ann Virginia Brown	Instructor in Biological Chemistry
Margaret E. Mellott	Instructor in Biological Chemistry
Jane F. Beardsley	Research Assistant in Biological Chemistry
Dorothy D. Hubbard	Weaver Fellow in Biological Chemistry

First Year. Second Semester. This course is designed to present the principles of biological chemistry and to indicate their applications to the clinical aspects of medicine. The phenomena of living matter and its chief ingredients, secretions and excretions are discussed in lectures and conferences and examined experimentally. Training is given in biochemical methods of investigation. Total hours: 208.

Graduate Courses. Consult the catalogue of the Graduate School for descriptions of the graduate courses offered by members of the staff.

DEPARTMENT OF PHARMACOLOGY

John C. Krantz, Jr.	Professor of Pharmacology and Head of the Department
C. Jelleff Carr	Associate Professor of Pharmacology
Harry K. Iwamoto	Assistant Professor of Pharmacology
Ruth Musser	Instructor in Pharmacology
Joseph G. Bird	Assistant and Fellow in Pharmacology
Amedeo S. Marrazzi	Lecturer in Pharmacology
William G. Harne	Demonstrator in Pharmacology
Frederick K. Bell	U. S. Pharmacopoeia Fellow

Mary S. Fassel	Emerson Fellow in Pharmacology
John B. Harmon	Emerson Fellow in Pharmacology
Edward B. Truitt, Jr.	Markle Fellow in Pharmacology
Raymond M. Burgison	Fellow in Pharmacology
Chi Chan Ling	Ohio Chemical Co., Fellow in Pharmacology

This course is designed to include those phases of pharmacology necessary for an intelligent use of drugs in the treatment of disease. The didactic instruction includes materia medica, pharmacy, prescription-writing, toxicology, posology, pharmacodynamics, and experimental therapeutics. The laboratory exercises parallel the course of lectures.

In addition, optional conference periods and lectures are available for students desiring further instruction or advice.

Total hours: 216.

Graduate Courses. Consult the catalogue of the Graduate School for descriptions of the graduate courses offered by members of the staff.

DEPARTMENT OF PATHOLOGY

Hugh R. Spencer	Professor of Pathology and Head of the Department
Robert B. Wright	Associate Professor of Pathology
C. Gardner Warner	Associate Professor of Pathology
Walter C. Merkel	Associate Professor of Pathology
Dexter L. Reimann	Associate Professor of Pathology
John A. Wagner	Associate Professor of Pathology
Albert E. Goldstein	Assistant Professor of Pathology
Milton S. Sacks	Associate in Pathology
Benedict Skitarelic	Associate in Pathology
Leon Freedom	Associate in Pathology
Conrad B. Acton	Instructor in Pathology
Howard B. Mays	Instructor in Pathology
Ephraim T. Lisansky	Instructor in Pathology
D. McClelland Dixon	Instructor in Pathology
William B. VandeGrift	Instructor in Pathology
William J. Bryson	Instructor in Pathology
Karl F. Mech	Instructor in Pathology
Seymour W. Rubin	Instructor in Pathology
Richard J. Colfer	Instructor in Pathology
Donald E. Fisher	Instructor in Pathology
Charles P. Barnett	Instructor in Pathology
Theodore Kardash	Instructor in Pathology
L. Calvin Gareis	Instructor in Pathology

Courses of instruction in pathology are given during the second and third years. The courses are based on the previous study of normal structure and function and aim to outline the history of disease. The relationship between clinical symptoms and anatomical lesions is constantly stressed.

General Pathology. *Second Semester, Second Year.* This course includes the study of disturbances of the body fluids; disturbances of structure, nutrition and metabolism of cells; disturbances of fat, carbohydrate and protein metabolism; disturbances of pigment metabolism; inflammation and tumors.

Laboratory instruction is based on the study of prepared slides (loan collection) and corresponding gross material.

APPLIED PATHOLOGY, INCLUDING GROSS MORBID ANATOMY AND MORBID PHYSIOLOGY. *Third Year.* The laboratory instruction in this course is carried out in small teaching museums where prepared specimens and material from autopsies with clinical histories and sections are available for study. For this work the class is divided into small groups. Clinical correlation is stressed.

AUTOPSIES. *Third Year.* Students in small groups attend autopsies at the morgues of the University Hospital and the Baltimore City Hospitals.

CLINICAL-PATHOLOGICAL CONFERENCE. (*Fourth Year.*) These exercises are held in collaboration with the Department of Medicine. Selected cases are discussed and autopsy findings are presented.

Second year	184 hours
Third year	160 hours
Fourth year	30 hours
Total	374 hours

DEPARTMENT OF MEDICINE

MAURICE C. PINCOFFS	Professor of Medicine and Head of the Department
T. NELSON CAREY	Professor of Clinical Medicine and Chairman of the Department of Medicine
G. CARROLL LOCKARD	Professor of Clinical Medicine
THOMAS P. SPRUNT	Professor of Clinical Medicine
H. RAYMOND PETERS	Professor of Clinical Medicine
LOUIS A. M. KRAUSE	Professor of Clinical Medicine
PAUL W. CLOUGH	Associate Professor of Medicine
WALTER A. BAETJER	Associate Professor of Medicine
WILLIAM S. LOVE, JR.	Associate Professor of Medicine
THOMAS C. WOLFF	Associate Professor of Medicine
HOWARD M. BUBERT	Associate Professor of Medicine
J. SHELDON EASTLAND	Associate Professor of Medicine
MILTON S. SACKS	Associate Professor of Medicine
LEWIS P. GUNDRY	Associate Professor of Medicine
SAMUEL MORRISON	Associate Professor of Medicine
THEODORE E. WOODWARD	Associate Professor of Medicine
WILLIAM H. SMITH	Associate Professor of Clinical Medicine
GEORGE MCLEAN	Assistant Professor of Medicine
WETHERBEE FORT	Assistant Professor of Medicine
FRANK J. GERAGHTY	Assistant Professor of Medicine
H. VERNON LANGELUTTIG	Assistant Professor of Medicine
SOL SMITH	Assistant Professor of Medicine
EDWARD F. COTTER	Assistant Professor of Medicine
SAMUEL LEGUM	Associate in Medicine
ROBERT A. REITER	Associate in Medicine
W. GRAFTON HERSPBERGER	Associate in Medicine
MEYER W. JACOBSON	Associate in Medicine
CONRAD B. ACTON	Associate in Medicine
IRVING FREEMAN	Associate in Medicine
FRANCIS G. DICKEY	Associate in Medicine
C. EDWARD LEACH	Associate in Medicine

Lawrence M. Serra	Associate in Medicine
Marie A. Andersch	Associate in Medicine
Harry M. Robinson, Jr.	Associate in Medicine
William K. Waller	Associate in Medicine
Ephraim T. Lisansky	Associate in Medicine
Samuel T. R. Revell	Associate in Medicine
Arthur Karfgin	Associate in Medicine
M. Paul Byerly	Associate in Medicine
Henry W. D. Holljes	Associate in Medicine
S. Edwin Muller	Associate in Medicine
Sidney Scherlis	Associate in Medicine
Henry J. Marriott	Associate in Medicine
Kurt Levy	Associate in Medicine
David Tenner	Instructor in Medicine
Philip D. Flynn	Instructor in Medicine
Edward S. Kallins	Instructor in Medicine
John A. Myers	Instructor in Medicine
William G. Helfrich	Instructor in Medicine
M. Paul Padget	Instructor in Medicine
Leon Ashman	Instructor in Medicine
Joseph E. Muse, Jr.	Instructor in Medicine
Daniel Wilfson, Jr.	Instructor in Medicine
William H. Kammer, Jr.	Instructor in Medicine
Samuel J. Hankin	Instructor in Medicine
Frederick J. Vollmer	Instructor in Medicine
Louis J. Kroll	Instructor in Medicine
John R. Davis	Instructor in Medicine
John Z. Bowers	Instructor in Medicine
Wilfred H. Townshend	Instructor in Medicine
Alvin J. Hartz	Instructor in Medicine
James R. Karns	Instructor in Medicine
Ernest Guy	Instructor in Medicine
John B. DeHoff	Instructor in Medicine
Edmund G. Beacham	Instructor in Medicine
Jonas Cohen	Instructor in Medicine
Charles E. Brambel	Instructor in Medicine
Walter Karfgin	Instructor in Medicine
L. Ann Hellen	Instructor in Medicine
Audry M. Funk	Instructor in Medicine
Morris Fine	Assistant in Medicine
Samuel Snyder	Assistant in Medicine
Rollin C. Hudson	Assistant in Medicine
Stephen J. Van Lill, 3rd	Assistant in Medicine
Franklin E. Leslie	Assistant in Medicine
Thomas L. Worsley	Assistant in Medicine
Adam Swiss	Assistant in Medicine
John C. Osborne	Assistant in Medicine
William G. Fusting	Assistant in Medicine
Stuart D. Sunday	Assistant in Medicine
Jonas Cohen	Assistant in Medicine

GENERAL OUTLINE

SECOND YEAR

Introduction to clinical medicine.
- (a) Introductory physical diagnosis. (1 hour a week, first semester; 2 hours a week, second semester.)
- (b) Medical clinics. (1 hour a week, second semester.)

THIRD YEAR

I. The methods of examination (13 hours a week). (a) History taking. (b) Physical diagnosis. (c) Clinical pathology.
  These subjects are taught and practiced in the hospital out-patient department and in the clinical laboratory.
II. The principles of medicine (200 hours).
  (a) Lectures, clinics and demonstrations in general medicine, neurology, pediatrics psychiatry and preventive medicine.

FOURTH YEAR

The practice of medicine.
I. Clinical clerkship on the medical wards. (26 hours a week for ten weeks.)
  (a) Responsibility, under supervision, for the history, physical examination, laboratory examinations and progress notes of assigned cases.
  (b) Ward classes in general medicine, the medical specialties, and therapeutics.
II. Clinics in general medicine and the medical specialties.
  (6 hours a week.)
III. Dispensary work in the medical specialties.
IV. Clinical-pathological conferences (1 hour a week).

MEDICAL DISPENSARY WORK

The medical dispensaries of both the Mercy and the University Hospitals are utilized for teaching in the third year. Each student spends two hours daily for ten weeks in dispensary work. The work is done in groups of four to six students under an instructor. Systematic history-taking is especially stressed. Physical findings are demonstrated. The student becomes familiar with the commoner acute and chronic disease processes.

PHYSICAL DIAGNOSIS

T. CONRAD WOLFF	Associate Professor of Medicine, and Head of the Department of Physical Diagnosis
ROBERT A. REITER	Associate in Medicine, in charge of Lower Respiratory Disease
SAMUEL LEGUM	Associate in Medicine, in charge of Cardiovascular Disease
IRVING FREEMAN	Associate in Medicine
GRAFTON HERSPERGER	Associate in Medicine
KURT LEVY	Associate in Medicine
LOUIS KROLL	Instructor in Medicine
DANIEL WILFSON	Instructor in Medicine
LEON ASHMAN	Instructor in Medicine
JOSEPH MUSE	Instructor in Medicine
SAMUEL HANKIN	Instructor in Medicine

John B. DeHoff	Instructor in Medicine
Alvin Hartz	Instructor in Medicine
William G. Helfrich	Instructor in Medicine
Stuart D. Sunday	Assistant in Medicine
Thomas L. Worsley, Jr.	Assistant in Medicine
Elizabeth D. Sherrill	Assistant in Medicine
William H. Fusting	Assistant in Medicine

The course in physical diagnosis starts with the first semester of the Sophomore year and ends with the termination of the second semester of the Junior year.

First Semester—Second Year—Lecture, one hour weekly covering the technique of history writing in the normal person and the mechanics of the physical signs elicited in the normal person through inspection, palpation, percussion and auscultation.

Second Semester—Second Year—Lecture, one hour weekly, covering the technique of history writing in cases involving disease, and the mechanics of pathological physical signs on inspection, palpation, percussion and auscultation.

In the third and fourth quarters small tutorial groups are formed, each under the direction of an instructor. Experience in physical examination of normal individuals is given in the third quarter for one afternoon weekly. In the fourth quarter the students become acquainted with abnormal signs through examination of hospital patients.

Third Year—a. The class is divided into four sections. Each section receives bedside instruction in physical diagnosis for seven weeks (2 hrs. daily). For this purpose small groups under an instructor are formed. The instruction is carried on in the Baltimore City Hospitals but in addition advantage is occasionally taken of the clinical opportunities in other institutions.

b. Lecture course (1 hr. weekly) covering the mechanisms of abnormal signs.

THERAPEUTICS

Third Year. General therapeutics and materia medica are taken up and an effort is made to familiarize the student with the practical treatment of disease. The special therapy of the chief diseases is then reviewed.

Fourth Year. Special consideration is given to the practical application of therapeutic principles in bedside teaching and the chief therapeutic methods are demonstrated.

Students attend therapeutic ward rounds once a week throughout their medical trimester.

TROPICAL MEDICINE

Certain phases of tropical medicine are considered in the course on clinical pathology. In addition, a course of lectures and demonstrations is given to the entire fourth year class.

TUBERCULOSIS

During the third year in connection with the instruction in physical diagnosis a practical course is given at the Municipal Tuberculosis Hospital. Stress is laid upon the recognition of the physical signs of the disease, as well as upon its symptomatology and gross pathology.

CARDIOLOGY

In the third year a series of lectures and clinics correlated with pathological studies is given the entire class.

During the fourth year an elective course in cardiology is offered at the Mercy Hospital. The course occupies one and one-half hours weekly. Physical diagnosis, electocardiography and the therapeutic management of cardiac cases are stressed.

Elective out-patient work is available also to members of the fourth year class in the cardiac clinic of the University Hospital.

SYPHILIS

Third Year. During the third year the subject of syphilis is dealt with in the lecture course.

Fourth Year. An elective course in the therapeutic management of syphilis is offered in the dispensary.

CLINICAL PATHOLOGY

Milton S. Sacks	Associate Professor of Medicine and Head of the Department of Clinical Pathology
Sol Smith	Assistant Professor of Medicine
Marie A. Andersch	Biochemist, University Hospital, Associate in Medicine
S. Edwin Muller	Associate in Medicine
John A. Wagner	Assistant in Medicine
L. Ann Hellen	Instructor in Medicine
Audrey M. Funk	Instructor in Medicine
C. L. Spurling	Baltimore RH Laboratory Fellow in Medicine
Joseph A. Guilbeau, Jr.	Baltimore Rh Laboratory Fellow in Obstetrics

Third Year. First and second semesters. The course in Clinical Pathology is designed to train the student in the third year in the performance and interpretation of fundamental diagnostic laboratory procedures used in clinical medicine.

During the first semester the work is devoted to a thorough consideration of diseases of the hematopoietic system. In the second semester, in connection with laboratory work in urinalysis, gastric analysis, hepatic, pancreatic and renal functions, thorough discussion of underlying biochemical and physiological mechanisms is undertaken. During this semester examination of cerebrospinal fluid, transudates and exudates is also included. Elements of clinical parasitology round out the work in this semester.

Each student provides his own microscope and blood counting equipment. A completely equipped locker is assigned to every student.

Total Hours: 128.

Fourth Year. During the fourth year the student applies in the laboratories of the various affiliated hospitals the knowledge acquired during the preceding year. A completely equipped locker is assigned enabling him to work independently of the general laboratories. Instructors are available during certain hours to give necessary assistance and advice.

GASTRO-ENTEROLOGY

Theodore H. Morrison	Clinical Professor of Gastro-Enterology
Samuel Morrison	Associate Professor of Gastro-Enterology
Maurice Feldman	Assistant Professor of Gastro-Enterology
Zachariah Morgan	Assistant Professor of Gastro-Enterology
Francis G. Dickey	Associate in Medicine
Z. Vance Hooper	Associate in Gastro-Enterology
Albert J. Shochat	Instructor in Gastro-Enterology
Alfred S. Lederman	Assistant in Gastro-Enterology

Third Year. A series of six lectures is given on the diseases of the digestive tract.

Fourth Year. Clinics and demonstrations are given to the class for one hour a week; dispensary instruction to small groups throughout the entire session. Practical instruction is given in the use of modern methods of study of the diseases of the gastro-intestinal tract.

DEPARTMENT OF PSYCHIATRY

Jacob E. Finesinger	Professor of Psychiatry and Head of the Department
H. Whitman Newell	Associate Professor of Psychiatry
Harry M. Murdock	Assistant Professor of Psychiatry
Philip S. Wagner	Assistant Professor of Psychiatry
Hans W. Loewald	Assistant Professor of Psychiatry
William W. Elgin	Assistant Professor of Psychiatry
J. G. N. Cushing	Assistant Professor of Psychiatry
Kathryn L. Schultz	Assistant Professor of Psychiatry
Isadore Tuerk	Associate in Psychiatry
Kathryn Dice	Associate in Clinical Psychology
Elizabeth LaForge	Associate in Psychiatric Social Work
A. Russell Anderson	Instructor in Psychiatry
Francis J. McLaughlin	Instructor in Psychiatry
Samuel Novey	Instructor in Psychiatry
Richard H. Pembroke, Jr.	Instructor in Psychiatry
Phoebe Rich	Instructor in Psychiatric Social Work
Marcella Weisman	Assistant in Psychiatric Social Work
Elizabeth Smith	Assistant in Psychiatric Social Work
Ruth Rabinovitch	Fellow in Psychiatry
Suzanne Mohler	Fellow in Clinical Psychology
William Stark	Fellow in Psychiatry
Marion A. Marfy	Fellow in Clinical Psychology

First Year. The 16 lecture hours will be devoted largely to a discussion of factors influencing the formation of character and the deviations in personality falling within the range of "normal." The usual endogenous and environmental experiences which provide critical periods during the life of an individual will be chronologically presented. Basic psychological concepts and psycho-dynamics will be reviewed. The methods of psychiatry with reference to the life history, mental status examination, and psychometric testing will be outlined and demonstrated.

Second Year. Fourteen 2-hour lecture demonstrations on psychopathology will introduce the student to personality deviations considered "abnormal." The mental status examination will be demonstrated in detail. The major and minor psychoses will be presented in terms of the psycho-dynamics of symptoms and reaction types. The student will be expected, at the conclusion of the year, to be familiar with the psychopathology and clinical characteristics of the usual psychiatric problems.

Third Year. The 16 lecture hours will be devoted to further considerations of special psychopathology and the principles of psychotherapy. Specialized forms of treatment will be reviewed, but the main emphasis will be toward familiarizing the student with forms of therapy feasible in routine medical practice. During the 36 clinic hours the student will be supervised in history-taking, mental status and psychometric examination, and follow-up studies of patients.

Fourth Year. A series of 10 lecture demonstrations will serve to summarize previous instruction and to appraise the student's insight into psychopathology, the recognition of clinical syndromes, and their management. Characteristic reaction types will be demonstrated and discussed largely as concerns probable etiology and possible preventive measures. The relationship of mental illness to the major problems of social upheaval, economic, and other sources of insecurity will be considered.

DEPARTMENT OF PEDIATRICS

J. Edmund Bradley	Professor of Pediatrics and Head of the Department
C. Loring Joslin	Professor of Pediatrics
Edgar B. Friedenwald	Professor of Clinical Pediatrics
A. H. Finkelstein	Associate Professor of Pediatrics
Frederick B. Smith	Associate Clinical Professor of Pediatrics
Albert Jaffe	Associate Clinical Professor of Pediatrics
Samuel S. Glick	Assistant Professor of Pediatrics
Jerome Fineman	Assistant Professor of Pediatrics
Gibson J. Wells	Assistant Professor of Pediatrics
William M. Seabold	Assistant Professor of Pediatrics
Clewell Howell	Associate in Pediatrics
G. Bowers Mansdorfer	Associate in Pediatrics
Arnold F. Lavenstein	Instructor in Pediatrics
Mary L. Hayleck	Instructor in Pediatrics
Israel P. Meranski	Instructor in Pediatrics
Melchijah Spragins	Instructor in Pediatrics
Thomas A. Christensen	Instructor in Pediatrics
Joseph M. Cordi	Instructor in Pediatrics
William Earl Weeks	Assistant in Pediatrics
J. Carlton Wich	Assistant in Pediatrics
O. Walter Spurrier	Assistant in Pediatrics
Joseph M. Cordi	Assistant in Pediatrics

A. Maynard Bacon, Jr.	Assistant in Pediatrics
Donald D. Cooper	Assistant in Pediatrics
Sarah Cook	Fellow in Pediatrics

Third Year. The course is presented as follows:

Lectures on infant feeding and the fundamentals of diseases of infants and children. (15 hours.)

Lectures on contagious diseases in conjunction with the Department of Hygiene and Preventive Medicine. (14 hours.)

A special course in physical diagnosis is given at City Hospitals. (20 hours.)

Clinical conferences demonstrating diseases of the new-born. (6 hours.)

Fourth Year. An amphitheatre clinic is given at which patients are shown to demonstrate the features of the diseases discussed. (30 hours.)

Conferences and demonstrations are given in problems concerning diagnosis, care, treatment and clinical pathology of the diseases of infants and children. (30 hours.)

Students are assigned subjects for the preparation of theses.

Clinical clerkships are assigned on the pediatric wards, where experience is gained in taking histories, making physical examinations, doing routine laboratory work, and following up the patients' progress. This is under the supervision of the visiting staff. (140 hours.)

Instruction is given in the pediatric clinic of the out-patient department of the University Hospital. This consists of 1½ hours daily for five weeks—30 minutes each day being devoted to a clinical demonstration of some interesting case by a member of the staff; one hour daily to taking histories and making physical examinations under supervision of one of the staff instructors. (45 hours.)

Total hours: 300.

NEUROLOGY

Leon Freedom	Associate Professor of Neurology
Philip F. Lerner	Assistant Professor of Neurology
William L. Fearing	Associate in Neurology
Edward F. Cotter	Associate in Neurology
Harry Teitelbaum	Associate in Neurology

Second Year. Fifteen one-hour lectures are given to correlate the anatomy and physiology of the nervous system with clinical neurology.

Third Year. Twenty hours of instruction are given to the whole class in neuropathology supplemented with pathological demonstrations. Sixteen lecture-demonstrations are given in which the major types of the diseases of the nervous system are discussed. A course is also given at the Baltimore City Hospitals, comprising eight periods of two hours each, in which the students in small groups carry out complete neurological examinations of selected cases which illustrate the chief neurological syndromes.

Fourth Year. A clinical conference one hour each week is given to the whole class at the University and Mercy Hospitals. All patients presented at these clinics are carefully examined. Complete written records are made by the students who demonstrate the patients before the class. The patients are usually assigned one or two weeks before they are presented, and each student in the class must study and present one or more patients during the year.

Ward Class Instruction. Nine hours of instruction are given to each student in small sections at the University and Mercy Hospitals. In these classes the students come in close personal contact with the patients in the wards under the supervision of the instructor.

Dispensary Instruction. Small sections are instructed in the dispensaries of the University and Mercy Hospitals five afternoons each week. In this way students are brought into contact with nervous diseases in their early and late manifestations.

HYGIENE AND PUBLIC HEALTH

Huntington Williams	Professor of Hygiene and Public Health
William H. F. Warthen	Associate Professor of Hygiene and Public Health
Ross Davies	Associate Professor of Hygiene and Public Health
Horace Hodes	Associate Professor of Hygiene and Public Health

Third Year. A one-hour lecture is given to the whole class each Tuesday during both semesters. Basic instruction is afforded in the clinical and public health aspects of the communicable diseases including syphilis and tuberculosis. The lectures are under the auspices of the Department of Medicine and are given by staff members of that department, including physicians representing pediatrics, hygiene and public health, and by staff members of the Baltimore City Health Department.

Fourth Year. Elective work is also assigned at Sydenham Hospital, the one-hundred bed communicable disease hospital of the City Health Department, and at its Western Health District, 617 West Lombard Street, where the District Health Officer arranges for home visiting and the student prepares and presents a Home Survey Report.

The course deals with the fundamentals of public health and supplements the work in the third year. The major emphasis in both years is on the practice of preventive medicine and the relation of prevention to diagnosis and treatment, and on the civic and social implications of the medical services.

LEGAL MEDICINE

Third Year. This course embraces a summary of some of the following: Proceedings in criminal and civil prosecution, medical evidence and testimony, identity and its general relations, rape, criminal abortions, signs of death, wounds in their medico-legal relations, natural and homicidal death, malpractice, insanity, and medico-legal autopsies, including poisoning.

Total hours: 4.

DERMATOLOGY AND SYPHILOLOGY

Harry M. Robinson, Sr.	Professor of Dermatology
Francis A. Ellis	Assistant Professor of Dermatology

Harry M. Robinson, Jr.	Assistant Professor of Dermatology
Eugene S. Bereston	Associate in Dermatology
A. Albert Shapiro	Associate in Dermatology
Israel Zeligman	Associate in Dermatology
R. C. V. Robinson	Associate in Dermatology
Lucile J. Caldwell	Instructor in Dermatology
Benjamin Highstein	Instructor in Dermatology
Mark B. Hollander	Instructor in Dermatology
V. Harwood Link	Assistant in Dermatology
Morris M. Cohen	Assistant in Dermatology

The third year class receives six lecture-demonstrations on the principles of dermatology by Dr. Robinson.

The senior course consists of demonstrations of the common skin diseases and venereal diseases given throughout the year by Dr. Robinson and staff. A weekly lecture-demonstration is given to the whole senior class by Dr. Robinson and Dr. Ellis.

Daily demonstrations and conferences are carried on by the out-patient staff in the dermatologic clinic involving both skin diseases and venereal diseases.

Third year	15 hours
Fourth Year	49 hours
Total	64 hours

DEPARTMENT OF SURGERY

Charles Reid Edwards	Professor of Surgery, and Acting Head of the Department
Walter D. Wise	Professor of Surgery
Elliott H. Hutchins	Professor of Surgery
F. L. Jennings	Professor of Clinical Surgery
D. J. Pessagno	Professor of Clinical Surgery
George H. Yeager	Professor of Clinical Surgery
Monte Edwards	Clinical Professor of Surgery
Otto C. Brantigan	Professor of Clinical Surgery
Harry C. Hull	Professor of Clinical Surgery
Charles A. Reifschneider	Clinical Professor of Traumatic Surgery
Thomas R. Chambers	Associate Professor of Surgery
R. W. Locher	Associate Professor of Clinical Surgery
Edward S. Johnson	Associate Professor of Surgery
Grant E. Ward	Associate Professor of Surgery
Cyrus F. Horine	Associate Professor of Surgery
Charles W. Maxson	Associate Professor of Surgery
C. W. Peake	Associate Professor of Surgery
James W. Nelson	Associate Professor of Surgery
William F. Reinhoff, Jr.	Associate Professor of Surgery
I. Ridgeway Trimble	Associate Professor of Surgery
W. Wallace Walker	Associate Professor of Surgery and Surgical Anatomy
H. F. Bongardt	Assistant Professor of Surgery
I. O. Ridgely	Assistant Professor of Surgery

Simon H. Brager	Assistant Professor of Surgery and Proctology
Thurston R. Adams	Assistant Professor of Surgery
Raymond F. Helfrich	Associate in Surgery
William B. Settle	Associate in Surgery
Arthur G. Siwinski	Associate in Surgery
George Govatos	Associate in Surgery
Joseph V. Jerardi	Associate in Surgery
Henry L. Rigdon	Associate in Surgery
Herbert E. Reifschneider	Associate in Surgery
Harold H. Burns	Associate in Surgery
William L. Garlick	Associate in Surgery
Joseph M. Miller	Lecturer in Surgery
J. Duer Moores	Instructor in Surgery
Calvin Hyman	Instructor in Surgery
Clyde F. Karns	Instructor in Surgery
Daniel R. Robinson	Instructor in Surgery
George H. Brouillet	Instructor in Surgery
Harry C. Bowie	Instructor in Surgery
Stuart G. Coughlan	Instructor in Surgery
John F. Schaefer	Instructor in Surgery
Robert F. Healy	Instructor in Surgery
Robert C. Sheppard	Instructor in Surgery
Samuel E. Proctor	Instructor in Surgery
F. Ford Loker	Instructor in Surgery
E. Roderick Shipley	Instructor in Surgery
Edwin H. Stewart, Jr.	Instructor in Surgery
Patrick C. Phelan, Jr.	Instructor in Surgery
William R. Geraghty	Assistant in Surgery
Howard B. McElwain	Assistant in Surgery
A. V. Buchness	Assistant in Surgery
T. J. Touhey	Assistant in Surgery
Samuel H. Culver	Assistant in Surgery
L. T. Chance	Assistant in Surgery
W. Allen Deckert	Assistant in Surgery
William C. Dunnigan	Assistant in Surgery
Howard L. Zupnik	Assistant in Surgery
Raymond M. Cunningham	Assistant in Surgery
John W. Chambers	Assistant in Surgery
Ross Z. Pierpont	Assistant in Surgery
Michael L. DeVincentis	Assistant in Surgery
Louis E. Goodman	Assistant in Surgery
Arlie R. Mansberger, Jr.	Research Fellow in Surgery

Instruction is given by means of lectures, laboratory work, recitations, dispensary work, bedside instruction, ward classes, and clinics. The work begins in the second year and continues throughout the third and fourth years.

The teaching is done in the anatomical laboratory, operative surgery laboratory, the dispensaries, wards, laboratories and operating rooms of the University and Mercy Hospitals, and in the wards and operating rooms of the Baltimore City Hospitals.

SECOND YEAR

TOPOGRAPHIC AND SURGICAL ANATOMY. *Second semester.* The course is designed to bridge the gap between anatomy in the abstract and clinical anatomy as applied to the study and practice of medicine and surgery.

The teaching is done in the anatomical laboratory, and students are required to dissect and to demonstrate all points, outlines, and regions on the cadaver. Underlying regions are dissected to bring out outlines and relations of structures.

Two lectures and two laboratory periods per week. Drs. Brantigan, Walker, Settle, Bowie, H. E. Reifschneider, Rigdon, Brouillet and Pierpont.

Total hours: 96.

PRINCIPLES OF SURGERY. *Second semester.* This course includes discussions of irritants, infection, repair of tissue, healing of tissue, relationship of bacteriology to surgery, modern chemotherapy in surgical diseases, ulcers, wounds, thrombophlebitis, phlebothrombosis, peripheral vascular diseases, thermal burns, injuries due to cold, surgical shock, diseases of the lymphatics, gangrene of the skin and extremities, aneurysms, hemorrhage, varicose veins, embolism, sinuses and fistulae, tetanus, anthrax and actinomycosis.

Lectures, two hours a week for one semester, are given to the whole class. Drs. Adams and Sheppard.

THIRD YEAR

GENERAL AND REGIONAL SURGERY. Lectures, recitations and clinics on the principles of surgery, general surgery including fractures and dislocations are given three hours a week to the whole class. Dr. Hull.

The class is divided into groups and receives instruction in history-taking and surgical pathology under the supervision of the chief of the pathologic department of the Baltimore City Hospitals. Instruction is also given in surgical diagnosis and in general surgery at the bedside and in the classroom at this institution by Drs. Hull, C. A. Reifschneider, Brantigan and Adams. Two hours per week are given in orthopaedic surgery by Dr. Voshell, chief of the orthopaedic service of this institution.

OPERATIVE SURGERY. Two courses in operative surgery are given under the supervision of Dr. Yeager assisted by Drs. Brager, Deckert, Govatos, Gutman, Healy, F. C. Karns, Mech, Joseph Miller, Peake and Rigdon. The class is divided into sections and each section is given practical and individual work under the supervision of the instructors.

SURGICAL OUT-PATIENT DEPARTMENT. Under supervision, the student takes the history, makes the physical examination, attempts the diagnosis and, as far as possible, carries out the treatment of ambulatory surgical patients in the University and Mercy Hospitals. Mercy Hospital—Dr. Raymond F. Helfrich assisted by the out-patient staff. University Hospital—Drs. Settle and Sheppard assisted by the out-patient staff.

FOURTH YEAR

CLINICS. A weekly clinic is given at the Mercy and at the University Hospitals to one-half the class throughout the year. As far as possible this is a diagnostic clinic. Mercy Hospital—Dr. Wise. University Hospital—Dr. C. R. Edwards.

Surgical Pathology. At Mercy Hospital. Specimens from the operating room and museum are studied in the gross and microscopically in relation to the case history. 14 hours. Dr. Pessagno.

Surgery of the Chest. At Mercy Hospital. Operations and conferences. 14 hours. Drs. Rienhoff and Garlick.

Traumatic Surgery. This course deals with operative and post-operative treatment of accident cases and with instructions as to the relationship between the state, the employee, the employer, and the physician's duty to each. One hour a week to sections of the class throughout the year. Dr. C. A. Reifschneider.

Clinical Clerkship. This work includes the personal study of assigned hospital patients, under supervision of the staffs of the University and Mercy Hospitals, and embraces history-taking, and physical examination of patients, laboratory examinations, attendance at operations and observation of post-operative treatment.

Ward Classes. Ward-class instruction in small groups will consist of ward rounds, surgical diagnosis, treatment and the after-care of operative cases. Mercy Hospital—Drs. Wise, Hutchins, Blake, Pessagno, Nelson, Trimble, Brager and Jerardi. University Hospital—Drs. C. Reid Edwards, Yeager, Hull and C. A. Reifschneider.

ORTHOPAEDIC SURGERY

Allen Fiske Voshell	Professor of Orthopaedic Surgery
Harry L. Rogers	Clinical Professor of Orthopaedic Surgery
Moses Gellman	Associate Professor of Orthopaedic Surgery
Henry F. Ullrich	Associate Professor of Orthopaedic Surgery
Milton J. Wilder	Assistant Professor in Orthopaedic Surgery
I. H. Maseritz	Associate in Orthopaedic Surgery
Jason H. Gaskel	Instructor in Orthopaedic Surgery

Didactic, clinical, bedside and out-patient instruction is given in the fourth year at the University and Mercy Hospitals and Dispensaries, Kernan Hospital for Crippled Children at Dickeyville and Baltimore City Hospitals. Instruction is also given in the third year in small groups at the Baltimore City Hospitals.

Weekly lectures throughout the year present all phases of orthopaedic surgery except fractures; brief discussions and demonstration of physical and occupational therapy are included.

Fourth year groups are given more intimate instruction biweekly at one of the above institutions; fracture cases are included here.

Third year	60 hours
Fourth year	90 hours
Total	150 hours

RHINOLOGY AND LARYNGOLOGY

Edward A. Looper	Professor of Rhinology and Laryngology
Waitman F. Zinn	Clinical Professor of Rhinology and Laryngology

Franklin B. Anderson	Associate Professor of Rhinology and Laryngology
Thomas R. O'Rourk	Associate Professor of Rhinology and Laryngology
Benjamin S. Rich	Associate Professor of Rhinology and Laryngology
Frederick T. Kyper	Associate Professor of Rhinology and Laryngology
W. Raymond McKenzie	Assistant Professor of Rhinology and Laryngology
Fayne A. Kayser	Assistant Professor of Rhinology and Laryngology
Theodore Schwartz	Assistant Professor of Rhinology and Laryngology
Samuel L. Fox	Associate in Rhinology and Laryngology
Benjamin H. Isaacs	Associate in Rhinology and Laryngology
Richard J. Cross	Instructor in Rhinology and Laryngology
John H. Hirschfeld	Assistant in Rhinology and Laryngology
Robert Z. Berry	Assistant in Rhinology and Laryngology
Ross C. Brooks	Assistant in Rhinology and Laryngology

Third Year. Instruction to whole class is given in the common diseases of the nose and throat, attention being especially directed to infections of the accessory sinuses, the importance of focal infections in the etiology of general diseases and modern methods of diagnosis. Lectures illustrated by lantern slides are given one hour weekly for seven weeks by Dr. Looper.

Fourth Year. Dispensary instruction is given for one and one-half hours daily, to small sections at the University and the Mercy Hospitals. The student is afforded an opportunity to study, diagnose and treat patients under supervision. Ward classes and clinical demonstrations are given in periods of one and one-half hours weekly throughout the session in the University and the Mercy Hospitals.

The Looper Clinic for bronchoscopy and esophagoscopy, recently established in the University Hospital, affords unusual opportunities for students to study diseases of the larynx, bronchi and esophagus. The clinic is open to students daily from 2 to 4 P.M. under direction of Dr. Looper.

The Mercy Hospital clinic for bronchoscopy and esophagoscopy is under the direction of Dr. Zinn. In these two clinics the etiology, symptomatology, diagnosis and treatment of foreign bodies in the air and food passages, as well as bronchoscopy, are taught to students as an aid in the diagnosis and treatment of diseases of the lungs.

Third year	9 hours
Fourth year	53 hours
Total	62 hours

GENITO-URINARY SURGERY

W. Houston Toulson	Professor of Genito-Urinary Surgery
Kenneth D. Legge	Professor of Clinical Genito-Urinary Surgery
Howard B. Mays	Assistant Professor of Genito-Urinary Surgery
Francis W. Gillis	Assistant Professor of Genito-Urinary Surgery
John F. Hogan	Assistant Professor of Genito-Urinary Surgery
Austin H. Wood	Associate in Genito-Urinary Surgery
Lyle J. Millan	Associate in Genito-Urinary Surgery
L. K. Fargo	Associate in Genito-Urinary Surgery
Hugh J. Jewett	Associate in Genito-Urinary Surgery
John S. Haines	Instructor in Genito-Urinary Surgery
Charles W. Hawkins	Assistant in Genito-Urinary Surgery
Morris A. Fine	Assistant in Genito-Urinary Surgery

Third Year. This course is given for seven hours to the whole class. It consists of lectures and demonstrations, including the use of lantern slides and motion pictures. Dr. Toulson.

Fourth Year. The course in this year includes explanations and demonstrations of urethroscopy, cystoscopy, ureteral catheterization, renal function tests, urography, urine cultures and the various laboratory procedures. The teaching consists of clinics and ward rounds to small groups, and attendance by members of the senior class upon the out-patients in the dispensary. The student here is placed much on his own responsibility in arriving at a diagnosis. These dispensary classes are conducted at both the Mercy and University Hospitals where practically every variety of urogenital disease is seen and used for teaching purposes.

Third year	6 hours
Fourth year	39 hours
Total	45 hours

PROCTOLOGY

Monte Edwards	Professor of Proctology
Thurston R. Adams	Assistant Professor of Proctology
Simon H. Brager	Assistant Professor of Proctology
Donald B. Hebb	Instructor in Proctology
William T. Supik	Instructor in Proctology
Raymond M. Cunningham	Instructor in Proctology

Third Year. Seven lectures are given to the whole class. This course is for instruction in the diseases of the colon, sigmoid flexure, rectum and anus, and covers the essential features of the anatomy and physiology of the large intestine as well as the various diseases to which it is subject. Dr. Monte Edwards.

Fourth Year. Ward and dispensary instruction is given in the University and Mercy Hospitals, where different phases of the various diseases are taught by direct observation and examination. The use of the proctoscope and sigmoidoscope in the examination of the rectum and sigmoid is made familiar to each student. Mercy Hospital—Drs. Blake and Brager. University Hospital—Drs. Monte Edwards and Adams.

Third year	7 hours
Fourth year	16 hours
Total	23 hours

OTOLOGY

Thomas R. O'Rourk	Clinical Professor of Otology
Franklin B. Anderson	Associate Professor of Otology
Benjamin S. Rich	Associate in Otology
Frederick T. Kyper	Associate in Otology
Samuel L. Fox	Associate in Otology
Richard J. Cross	Instructor in Otology

The course in otology is planned to give a practical knowledge of the anatomy and physiology of the ear, and its proximity and relationship to the brain and other vital structures. The inflammatory diseases, their etiology, diagnosis, treatment and complications are particularly stressed, with emphasis upon their relationship to the diseases of children, head-surgery and neurology.

Third Year. The whole class is given instruction by means of talks, anatomical specimens and lantern slides.

Fourth Year. Small sections of the class receive instruction and make personal examinations of patients under the direction of an instructor. The student is urged to make a routine examination of the ear in his ward work in general medicine and surgery.

Third year	12 hours
Fourth year	40 hours
Total	52 hours

NEUROLOGICAL SURGERY

Charles Bagley, Jr.	Professor of Neurological Surgery
Richard G. Coblentz	Professor of Clinical Neurological Surgery
James G. Arnold, Jr.	Associate Professor of Neurological Surgery
John A. Wagner	Associate Professor of Pathology and Neuropathology
Raymond K. Thompson	Instructor in Neurological Surgery, Director of Neurological Surgery Research
Frank J. Otenasek	Assistant in Neurological Surgery
John W. Chambers	Assistant in Neurological Surgery
Robert M. N. Crosby	Hitchcock Fellow in Neurological Surgery Assigned to Research
J. Pomeroy Nichols	Hoffberger Fellow, Neurological Surgery
Louis O. J. Manganiello	Resident in Neurological Surgery
José A. Alvarez	Assistant Resident in Neurological Surgery
George W. Smith	Assistant Resident, Baltimore City Hospitals, Assigned to Neurological Surgery

Third year. The course covers instruction in diagnosis and treatment of surgical conditions of the brain, spinal cord and the peripheral nerves. Drs. Bagley, Coblentz, Arnold and Thompson.

Fourth year. Weekly ward rounds and conferences are given at the University Hospital. Drs. Bagley, Coblentz, Arnold and Thompson. Instruction is given (elective) in the out-patient dispensary by Drs. Louis Manganiello, George Smith and José A. Alvarez.

Third year	12 hours
Fourth year	15 hours
Conference and ward rounds (elective)	32 hours
Neurological Surgery Dispensary (elective)	48 hours
Total	107 hours

ONCOLOGY

J. Mason Hundley, Jr.	Professor of Gynecology
Grant E. Ward	Associate Professor of Surgery
Beverley C. Compton	Assistant Professor of Gynecology
John C. Dumler	Assistant Professor of Gynecology

William K. Diehl	Assistant Professor of Gynecology
Everett S. Diggs	Assistant Professor of Gynecology
Ernest I. Cornbrooks, Jr.	Assistant Professor of Gynecology
Arthur G. Siwinski	Associate in Surgery
Edwin H. Stewart	Instructor in Surgery
J. Duer Moores	Instructor in Surgery
Louis F. Goodman	Assistant in Surgery
Robert G. Chambers	National Cancer Institute Trainee
Harold P. Biehl	National Cancer Institute Trainee
E. Eugene Covington	Assistant Radiologist

The purpose of the courses in Oncology is to give students training in the diagnosis and treatment of neoplastic diseases not obtained in other departments and at the same time to correlate this training with that received in surgery, medicine, roentgenology and other specialties.

Third Year: An out-patient clinic is held once weekly, which affords an opportunity for instruction in small groups of students assigned in rotation from the general surgical and gynecological sections. The gynecological problems are under the supervision of Dr. Hundley and the general surgical conditions are under the direction of Dr. Ward.

In addition to dispensary work, five lectures in general oncology are given by Dr. Ward and staff to the entire class at the end of the year. The increasing importance of the cancer problem throughout the State, Nation and civilized world is emphasized. The biological aspects of cancer and the relation of hormones, carcinogenic agents, and etiological factors are reviewed. The histological classifications and gradation of neoplasms are outlined and the biophysical effects of irradiation therapy discussed. The diagnosis, surgical and radiological treatment of neoplasms of the head and neck, oral cavity, skin, breasts, and hemopoietic system are also discussed. Physics and practical application of radium is given. The diagnosis and treatment, both surgical and radiological, of neoplasms of the head and neck, oral cavity, skin, breasts and hemopoietic system are also covered.

Fourth Year: Each ward class meets for one and one-half hours once a week for five weeks with Dr. Ward and staff for demonstration and discussion of patients with neoplastic diseases.

Dr. Hundley and staff give instructions in the diagnosis and treatment of cancer of the generative organs during the regular gynecological courses in addition to the above mentioned dispensary instruction.

Third year	8 hours
Fourth year	16 hours
Total	24 hours

DENTISTRY

[1]Brice M. Dorsey	Professor of Oral Surgery
[1]Myron S. Aisenberg	Professor of Pathology

---

[1] Faculty Member, School of Dentistry.

[1]Joseph C. Biddix, Jr.	Professor of Oral Diagnosis
[1]Kyrle W. Preis	Professor of Orthodontics
[1]Harry M. Robinson, Sr.	Professor of Dermatology
[1]Grayson W. Gaver	Professor of Dental Prosthesis
[1]Ernest B. Nuttall	Professor of Crown and Bridge
[1]Kenneth V. Randolph	Professor of Operative Dentistry
[1]Edward C. Dobbs	Professor of Pharmacology
George H. Yeager	Professor of Clinical Surgery
Grant E. Ward	Associate Professor of Surgery and Oral Surgery
[1]Hugh H. Hicks	Associate Professor of Periodontology
[1]Lewis C. Toomey	Associate Professor of Oral Surgery
George McLean	Assistant Professor of Medicine
[1]Wilbur O. Ramsay	Assistant Professor of Clinical Dental Prosthesis
[1]Samuel H. Bryant	Instructor in Oral Diagnosis
[1]Russell Gigliotti	Instructor in Clinical Oral Diagnosis
[1]Joseph P. Cappuccio	Instructor in Oral Surgery
[1]Conrad L. Inman	Instructor in Anesthesiology

This section has been reorganized for the teaching of both medical and dental students. There has been established a division in the out-patient department, and beds will be provided in the University Hospital, for the care of patients who will be available for the teaching of students from both schools.

Senior year: clinics weekly.

Ward instruction and group teaching are given. This includes diagnosis and treatment of diseases of the face, mouth and jaws.

INDUSTRIAL MEDICINE AND SURGERY

G. Carroll Lockard	Professor of Clinical Medicine
Charles A. Reifschneider	Clinical Professor of Traumatic Surgery
Thurston R. Adams	Assistant Professor of Surgery

This section is under the combined supervision of the medical and surgical departments. It is a cooperative effort by members of the medical school and hospital staff to afford means for clinical and laboratory study of the patient who has been subjected to traumatic or medical industrial hazard, so that adequate care may be instituted to promote his physical well-being. The facilities of the laboratories of the medical school and hospital are available as required.

Under direction of this department limited undergraduate instruction is given, especially in the methods of examination and of keeping records and in the general medico-legal principles as they affect the industrial employee, the employer, the general insurers, the physician and the hospital. There is also instruction on methods of making life insurance and other physical examinations, whether for employment or for health purposes. The wards of the University, Mercy and Baltimore City Hospitals provide for bed-side instruction.

Total hours: 48.

---

[1] Faculty Member, School of Dentistry.

PLASTIC SURGERY

Edward A. Kitlowski	Clinical Professor of Plastic Surgery
Clarence P. Scarborough	Instructor in Plastic Surgery
Robert W. Johnson, III	Assistant in Plastic Surgery

This course is designed to acquaint students with the problems of reconstructive and plastic surgery. A subdivision in the dispensary has been established and beds for patients will be available for instruction in this course at the University and Baltimore City Hospitals and Kernan's Hospital for Crippled Children.

Third Year. Five lectures are given to the whole class. Dispensary instruction is provided on Mondays and Fridays.

Fourth Year. Ward rounds and operative demonstrations are held at the hospitals.

SPEECH TRAINING CLINIC

Edward A. Kitlowski	Clinical Professor of Plastic Surgery
Ray Ehrensberger	Professor of Speech
Merle Ansberry	Associate Professor of Speech

This department has been installed in conjunction with the Department of Speech of the University at College Park to evaluate the speech difficulties in children with congenital defects. Admission to the Clinic is by appointment only. The Clinic operates all day Thursdays.

DEPARTMENT OF OBSTETRICS

Louis H. Douglass	Professor of Obstetrics, and Head of the Department
Emil Novak	Associate Professor of Obstetrics
J. Morris Reese	Associate Professor of Obstetrics
Isadore A. Siegel	Assistant Professor of Obstetrics
John E. Savage	Assistant Professor of Obstetrics
D. Frank Kaltreider	Assistant Professor of Obstetrics
Margaret B. Ballard	Associate in Obstetrics
Hugh B. McNally	Associate in Obstetrics
D. McClelland Dixon	Associate in Obstetrics
Osborne C. Christensen	Associate in Obstetrics
J. Huff Morrison	Instructor in Obstetrics
Kenneth B. Boyd	Assistant in Obstetrics
W. Kenneth Mansfield, Jr.	Assistant in Obstetrics
George H. Davis	Assistant in Obstetrics
Charles H. Doeller, Jr.	Assistant in Obstetrics
J. King B. E. Seegar, Jr.	Assistant in Obstetrics
Schuyler G. Kohn	Assistant in Obstetrics
Lorman L. Levinson	Assistant in Obstetrics
L. Calvin Gareis	Assistant in Obstetrics
Theodore Kardash	Assistant in Obstetrics

Third Year. The lectures and recitations consisting of three hours' teaching weekly are designed to cover the anatomy of the female generative tract and the bony pelvis, the physiology and development of the ovum and the physiology of pregnancy and labor. Following this the pathology of pregnancy, labor and the puerperium are taken up. Drs. Douglass, Reese, Siegel, Savage, and Dixon.

Each student spends time during his junior year at the Baltimore City Hospitals observing, assisting and finally delivering patients under strict supervision. Each student sees about twenty deliveries there, and does a considerable amount of the routine work.

The junior students are assigned as assistants to the seniors in the home delivery service and accompany them on deliveries.

Each student receives, in small groups, ten hours of instruction in palpation of patients and mensuration of the pelvis and demonstrations of the mechanism of labor. Drs. Siegel and McNally.

Fourth Year. At the weekly clinical conference, cases are presented and discussed and the student body is encouraged to offer opinions and to ask questions. There is no didactic teaching done, and an earnest effort is made to keep it, in every sense of the word, a conference. Dr. Douglass and associates.

The ward classes are held twice weekly for five weeks for each group. Various subjects are assigned and discussed, patients and their histories are presented. Drs. Reese, Novey, Savage and McNally.

Manikin instruction is given once a week. Drs. Dixon, Kaltreider and Doeller.

During the same five-week period, the students are sent into patients' homes to conduct deliveries under supervision of a senior member of the house staff and with the assistance of a graduate nurse. The student is held responsible for the complete conduct of each assigned case.

Each student spends thirty hours in the prenatal clinic, taking histories and examining patients under supervision.

Finally, the students are invited to attend the monthly meetings of The Committee on Maternal Mortality, where all maternal deaths occurring in Baltimore are openly discussed. *Hours*—Third year—148; Fourth year—102; total—250.

DEPARTMENT OF GYNECOLOGY

J. Mason Hundley, Jr.	Professor of Gynecology, and Head of the Department
Thomas K. Galvin	Clinical Professor of Gynecology
Leo Brady	Assistant Professor of Gynecology
Edward P. Smith	Assistant Professor of Gynecology
William K. Diehl	Assistant Professor of Gynecology
Everett S. Diggs	Assistant Professor of Gynecology
Beverley C. Compton	Assistant Professor of Gynecology
John C. Dumler	Assistant Professor of Gynecology
Ernest I. Cornbrooks, Jr.	Assistant Professor of Gynecology
J. J. Erwin	Assistant Professor of Gynecology
John T. Hibbitts	Associate in Gynecology
Kenneth B. Boyd	Associate in Gynecology
Gerald A. Galvin	Associate in Gynecology
Thomas S. Bowyer	Instructor in Gynecology
Ernest S. Edlow	Instructor in Gynecology
W. Allen Deckert	Instructor in Gynecology

H. L. Granoff	Instructor in Gynecology
Theodore Kardash	Instructor in Gynecology
Charles B. Marek	Instructor in Gynecology
Helen I. Maginnis	Instructor in Gynecology
Charles H. Doeller, Jr.	Instructor in Gynecology
William A. Dodd	Instructor in Gynecology
Harry McB. Beck	Instructor in Gynecology
William C. Duffy	Instructor in Gynecology
Joseph C. Sheehan	Instructor in Gynecology
William J. Rysanek	Instructor in Gynecology
Harry F. Kane	Instructor in Gynecology
Robert B. Tunney	Instructor in Gynecology

Third Year. A course of thirty lectures and recitations is given to the whole class. In addition, a short course of lecture-demonstrations is given at the Baltimore City Hospitals, consisting of eight periods of one hour each, in which small groups of students are instructed in the fundamentals of gynecological diagnosis and examination.

Fourth Year. Operative clinics—lectures and demonstrations—are given six hours per week, for five weeks, to sections of the class.

Instruction in female urology is given. A small number of students may attend the cystoscopic dispensary which is held twice weekly.

The course in gynecology also includes instruction in the diagnosis and treatment of cancer of the generative organs. Small groups of students attend the oncological dispensary for additional work.

Third year	38 hours
Fourth year	74 hours
Total	112 hours

DEPARTMENT OF OPHTHALMOLOGY

F. Edwin Knowles, Jr.	Assistant Professor of Ophthalmology and Chairman of the Department,
Jonas Friedenwald	Lecturer in Ophthalmic Pathology
Joseph I. Kemler	Associate in Ophthalmology
Paul N. Friedman	Instructor in Ophthalmology
A. Kremen	Instructor in Ophthalmology
Cleo D. Stiles	Instructor in Ophthalmology
Ruby A. Smith	Instructor in Ophthalmology
D. J. McHenry	Instructor in Ophthalmology
F. E. Brumback	Instructor in Ophthalmology
Richard J. Cross	Instructor in Ophthalmology
Frederick M. Reese	Assistant in Ophthalmology

Third Year. Second semester. Dr. Friedman reviews the anatomy and physiology of the eye and discusses the methods used in making the various examinations. Errors of refraction and their effect upon the general system are explained. Weekly section work, demonstrating the use of the ophthalmoscope, is carried on during the entire session at the Baltimore Eye, Ear, and Nose Hospital.

Fourth Year. Clinics and demonstrations are given in diseases of the eye, weekly, for one year. Dr. Knowles.

This course consists of lectures upon the diseases of the eye, with particular reference to their diagnosis and relation to general medicine. Special lectures will be given upon vascular changes in the eye and upon the pathology of the eye. Some operations will be demonstrated by motion pictures.

Weekly ward classes are held at the University and Mercy Hospitals during which the eye grounds in the various medical and surgical conditions are demonstrated. Also daily demonstrations are given in the taking of histories and the diagnosis and treatment of the various conditions as seen in the dispensary. Drs. Knowles, Kemler, Kremen, Smith, McHenry, Brumback, Cross, Jeppi and Pacienza.

Third year	20 hours
Fourth year	104 hours
Total	124 hours

DEPARTMENT OF ROENTGENOLOGY

Walter L. Kilby	Professor of Roentgenology, and Head of the Department
Charles N. Davidson	Associate Professor of Roentgenology
Asa D. Young	Assistant Professor of Roentgenology
Stanley H. Macht	Assistant Professor of Roentgenology
Donald J. Barnett	Assistant Professor of Roentgenology
John M. Dennis	Fellow in Roentgenology

During the academic year, small groups of the third and fourth year classes are given weekly instruction in the diagnostic and therapeutic uses of the Roentgen rays. An effort is made to familiarize the student with the indications for and the limitations of the Roentgen ray examinations. The history, physics and practical therapeutic application of Roentgen rays are given stressing the use of radiation as a weapon now available in a variety of disorders of the human body ranging from simple inflammations to malignant neoplastic conditions. Conferences are held with the various departments during the school year which are also open to members of the fourth year class.

Third year	8 hours
Fourth year	22 hours
Total	30 hours

DEPARTMENT OF ANAESTHESIOLOGY

Alfred T. Nelson	Assistant Professor of Anaesthesiology and Chairman of the Department
James Russo	Assistant in Anaesthesiology

THIRD YEAR

Lectures are given on the general physiology and pharmacology of anesthesia, with consideration of the special physiology and pharmacology of each anaesthetic agent. The methods of induction and administration of anaesthesia are discussed. The factors influencing the selection of the anaesthetic are emphasized, and the preparation and care of the anaesthetized patient are carefully explained.

These lectures are correlated with practical demonstrations, supplemented by lantern slides and motion pictures, at the University Hospital.

FOURTH YEAR

Each senior student is required to spend twelve hours per week for two weeks observing and administering anaesthetics in the operating room.

Third year	10 hours
Fourth year	24 hours
Total	34 hours

HISTORY OF MEDICINE

Louis A. M. Krause	Professor of Clinical Medicine

Beginning with the spring of 1942 a group of lectures on the history of medicine has been presented on selected phases and trends of the development of medical knowledge and practice. It is planned to avoid duplication of subject matter for at least four years.

These lectures are offered primarily for our students, but a cordial invitation is extended to anyone who may wish to attend.

Announcement of the lectures will be made by mail and on the bulletin board of the School of Medicine.

ART AS APPLIED TO MEDICINE

Carl Dame Clarke	Associate Professor of Art as Applied to Medicine
Jane L. Bleakley	Assistant in Art as Applied to Medicine
Richard Dowell Grill	Assistant in Art as Applied to Medicine
Carl Christian Stein	Assistant in Art as Applied to Medicine

This department is maintained for the purpose of supplying pictorial and plastic illustrations for visual teaching in the classrooms of the medical school and for publication in scientific periodicals.

Special courses of instruction are given to qualified students.

POSTGRADUATE COURSES

Committee on Postgraduate Studies

Howard M. Bubert, *Chairman and Director*
Sarah Cook, *Assistant Director*

Dietrich C. Smith, *1st Vice-chairman*
L. A. M. Krause, *2nd Vice-chairman*
Milton S. Sacks, *Secretary*
John A. Wagner
Otto C. Brantigan
John C. Krantz, Jr.
Eduard Uhlenhuth
Allen F. Voshell
J. Morris Reese
Wetherbee Fort

Mrs. Elizabeth Carroll, *Executive Secretary*

The Dean—*Ex Officio*

Calendar: Postgraduate courses are offered throughout the year.

The activities of the Postgraduate Committee during the past year, were mainly in the direction of improving its organization and establishing, upon a firm basis, the projects previously instituted.

Again, three extramural courses were given in different sections of the state; one in each of the following counties: Prince George's County at Cheverly; Wicomico County at Salisbury, and Frederick County at Frederick. Enrollment this year was 101, representing an increase of 3 over last year's 98. The Committee is of the opinion that it is impractical, with its present resources, to enlarge this endeavor to embrace the more distant points in the state, but it is considering the possibility of giving such a course in the Baltimore area, should the demand arise.

The Committee is still intensely interested in assisting in securing and training the house staffs of smaller hospitals throughout the state. However, this has proven to be a most complex problem, which has been made even more difficult of solution by the ever growing shortage of candidates for these positions. In view of the increasing demands of the armed services and the veterans administration, it would seem that this problem is going to become more difficult as time goes on, thus rendering a solution ever more necessary.

The following intramural courses have been continued successfully. However, it has been necessary in certain instances to make some upward adjustments of the tuition fees charged:

General Anatomy "A": This course is designed to prepare candidates for the examination of the American Board of General Surgery and Surgical Specialties. There is no hard and fast rule about either the content or duration of the course. Students may dissect a complete cadaver or any particular region in which they may be interested. Tuition arranged according to course content and duration.

Surgical Anatomy "B": This course is designed to prepare candidates for the examination in Anatomy of the American Board of Surgery. This is a ninety-hour course (3 hours a day, 2 days a week) given in conjunction with the regular sophomore medical course in surgical anatomy. Tuition $150.00.

Pathology "B": This course is designed to prepare candidates for certification in surgery, surgical specialties and internal medicine. Individuals will receive training in autopsy and surgical pathology. Minimum duration is full time, six months. Tuition: $150.00.

Pathology "C": (neurological) This course is designed to aid in meeting the requirements of the specialty boards in neurological sciences and covers basic studies in diseases of the central nervous system. Duration is six months, full time. Tuition: $200.00 plus $10.00 laboratory fee.

Gynecology and Obstetrics "A": This is a review for general practitioners. Duration is eighteen hours each of gynecology and obstetrics per week for twelve weeks. Tuition: $150.00.

GYNECOLOGY, ONCOLOGY AND FEMALE UROLOGY "B": This is a review designed primarily for the general practitioner. Duration is ten weeks, full time. Tuition: $125.00.

BASIC SCIENCES AS THEY APPLY TO OBSTETRICS AND GYNECOLOGY: This course is a review of the fundamentals of the basic sciences as they apply to Gynecology and Obstetrics and recent advances in these fields. It has been approved by the Postgraduate Survey Committee of the American Board of Obstetrics and Gynecology, and may be presented for six months' credit towards certification by the Board. Duration is 20 weeks fulll time, beginning early in October. Tuition: $375.00

The Committee hopes that it will be able to establish a course in the Basic Sciences as they apply to Clinical Medicine, in addition to those above mentioned.

Full descriptions of these courses are available. Inquiries should be addressed to the Post Graduate Committee, University of Maryland School of Medicine, Baltimore 1, Maryland.

FIRST YEAR SCHEDULE

FIRST SEMESTER, SEPTEMBER 22, 1949 TO JANUARY 28, 1950

Hours	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
9.00 to 12.00	*Histology and Embryology 11–12 lecture *Bressler 2*		Orientation (Sept. 28–Oct. 12) 9–10 lecture *Adm. 1*	*Histology and Embryology 11–12 lecture *Bressler 2*		Gross Anatomy A. H. 9–11
12.00 to 1.00	Lunch					
1.00 to 5.00	Gross Anatomy Lectures *A.H.* (1–2) Daily and Laboratories *Bressler 1* (2–5) Daily					

* Course ends December 20, 1949.

SECOND SEMESTER, JANUARY 30 TO JUNE 10, 1950

Hours	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
9.00 to 12.00	Laboratory — Biol. Chem. Sect. A	Laboratory — Biol. Chem. Sect. B	Laboratory — Biol. Chem. Sect. A	Laboratory — Biol. Chem. Sect. B		
12.00 to 1.00	Lunch	Lunch	Lunch	Lunch	Lunch	
1.00 to 2.00	Biol. Chem. *Adm. 1*	Biol. Chem. *Adm. 1*	Biol. Chem. *Adm. 1*	Biol. Chem. *Adm. 1*	Biol. Chem. *Adm. 1*	
2.00 to 3.00	Neuro-Physiology *Bressler 2*	Neuro-Anatomy Lecture (2–3)	Biol. Chem. Conference *Adm. 1*	Neuro-Anatomy Lecture (2–3)	Biol. Chem. Conference *Adm. 1*	
3.00 to 5.00	Psychiatry (3–5) *C. H.*	Laboratory (3–5)		Laboratory (3–5)	Neuro-Physiology *Bressler 2* (3–4)	

Locations of Lecture Halls and Laboratories:

Adm. 1—First Floor, Administration Building, Lombard and Greene Streets.
A. H.—Anatomical Hall—Upper Hall, N. E. Cor. Lombard and Greene Streets.
C. H.—Chemical Hall, Lower Hall, N. E. Cor. Lombard and Greene Streets.
Biological Chemistry Laboratory—Third Floor, 31 South Greene Street.
Bressler Research Laboratory—29 S. Greene Street.
  Gross Anatomy—First Floor.
  Histology and Embryology—Second Floor.
  Neuro-anatomy—Second Floor.

Mid-Year Examinations—January 22-28, 1950
Final Examinations—Begin May 29, 1950

SECOND YEAR SCHEDULE

FIRST SEMESTER, SEPTEMBER 22, 1949 TO JANUARY 28, 1950

Hours	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8.30 9.30	Physiology *Bressler 2*	Physiology *Bressler 2*	Medicine *Bressler 2*	Physiology *Bressler 2*	Physiology *Bressler 2*	Psychiatry (10–11) *Adm. 1*
9.30 to 10.30	Physiology Conference *Bressler 2*	Bacteriology *Adm. 1*		Pharmacology *Bressler 2*	Pharmacology *Bressler 2*	
10.30 to 12.30	†Bacteriology Laboratory				Neurological Diagnosis *C. H.*	
12.30	Lunch					
1.00 to 5.00	Pharm. Lect. (1–2) *Bressler 2* Pharmacology *B* Physiology *A*	Laboratory *A* Laboratory *B*		Pharmacology (1 to 4) *B* Physiology *A*	Laboratory *A* Laboratory *B*	

† Bacteriology Laboratory—Section work during the last month.

SECOND SEMESTER, JANUARY 30 TO JUNE 10, 1950

Hours	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8.30 to 9.30	Surgery *Bressler 2*	Surgery *Bressler 2*	Surgical Anatomy *Bressler 2*	Medical Clinic *Amp.*	Physical Diagnosis *Adm. 1*	
9.30 to 10.30	Pharmacology *Bressler 2*	Pharmacology *Bressler 2*	Surgical Anatomy Laboratory *Bressler 1*		Pharmacology *Bressler 2*	Obstetrics *Bressler 2*
10.30 to 11.30	Pathology *C. H.*	Pathology *C. H.*		Pathology *C. H.*	Pathology *C. H.*	
11.30	Lunch					
12.00 to 2.00	Pathology Laboratory	Pathology Laboratory	Immunology Laboratory	Pathology Laboratory	Pathology Laboratory	
2.00 to 3.00	Surgical Anatomy *Adm. 1*	‖Immunology Laboratory		Pharmacology Laboratory *Sect. A*	Pharmacology Laboratory *Sect. B*	
3.00 to 5.00	Surgical Anatomy Laboratory *Bressler 1*		Optional period Pathology Immunology	Physical Diagnosis *Sect. B* (3.00–5.00) *U. H. D*	Physical Diagnosis *Sect. A* (3.00–5.00) *U. H. D.*	

‖ Immunology Laboratory—Section work during last two months.

Locations of Lecture Halls and Laboratories:

Adm. 1—First floor, Administration Building, Lombard and Greene Streets

C. H.—Chemical Hall, Lower Hall, Lombard and Greene Streets.

Amp.—Wilson Memorial Amphitheatre, New University Hospital, Greene and Redwood Streets, Eighth Floor

U. H. D.—University Hospital Dispensary, Old Hospital Building.

Laboratories:

Physiology, Pharmacology, Surgical Anatomy—Bressler Building.

Bacteriology, Immunology, Pathology, Second Floor, 31 S. Greene Street.

Mid-Year Examinations—January 22-28, 1950

Final Examinations—Begin May 29, 1950

THIRD YEAR SCHEDULE

SEPTEMBER 22, 1949 TO JUNE 10, 1950

SCHEDULE 1

Hours	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8.30 to 9.20	(Whole Class) Obstetrics *C. H.* †Gynecology Mar. 27 to May 15	(Whole Class) Surgery *C. H.*	(Whole Class) Obstetrics *C. H.* †Gynecology Mar. 29 to May 17	(Whole Class) Surgery *C. H.*	(Whole Class) Pathology *C. H.*	(Whole Class) Surgery *C. H* †Anaesthesiology Mar. 18 to May 20 *Amp.*
9.30 to 10.00	Transfer to Baltimore City Hospitals					
10.00 to 12.00	Physical Diagnosis, Pathology, and Neurology at B. C. H.					
12.00 to 1.00	Transfer and Lunch	Transfer and Lunch	Lunch	Transfer and Lunch	Lunch	
1.00 to 2.00	(Whole Class) Nose & Throat, Urology, Otology, Proctology, Plastic Surgery *C. H.*	(Whole Class) *Gynecology †Eye—10 wks. Jan. 31 to Apr. 11 †Oncology —5 wks. Apr. 18 to May 23 *C. H.*	Medical Clinic *B. C. H.*	(Whole Class) Clinical Pathology *Bressler 2*	Obstetrical Clinic *B. C. H.*	
2.00 to 4.00	(Whole Class) Pathology Laboratory *31*		Surgery	(Whole Class) Clinical Pathology — Laboratory *Bressler 5*	Surgery	
4.00 to 5.00	(Whole Class) *Physical Diagnosis, *C. H.* †Legal Medicine †Psychiatry, *A. H.*	(Whole Class) Hygiene and Public Health *C. H.*	Orthopaedics Roentgenology *B. C. H.*		Orthopaedics *B. C. H.*	

* First Semester. † Second Semester.

THIRD YEAR SCHEDULE
SEPTEMBER 22, 1949 TO JUNE 10, 1950

SCHEDULE 2

Hours	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8.30 to 9.20	(Whole Class) Obstetrics *C. H.* †Gynecology Mar. 27 to May 15	(Whole Class) Surgery *C. H.*	(Whole Class) Obstetrics *C. H.* †Gynecology Mar. 29 to May 17	(Whole Class) Surgery *C. H.*	(Whole Class) Pathology *C. H.*	(Whole Class) Surgery *C. H.* Anaesthesiology Mar. 18 to May 20 *Amp.*
9.30 to 10.20	Pediatrics *C. H.*	•Medicine *C. H.*	•Medicine *C. H.*	•Therapeutics *C. H.*	•Medicine *C. H.*	Neurology *C. H.*
10.30 to 12.30	Operative Surgery—*Bressler 6* Medical and Surgical Dispensaries—(Univ. and Mercy Sections)					
12.30 to 1.00	Lunch					
1.00 to 2.00	Same as Schedule 1		Medical Clinic *Amp.*	Same as Schedule 1	Psychiatry Dermatology U. H. Disp.	
2.00 to 4.00			Ophthalmoscopy (5 weeks) *B. E. H.* — Obstetrics (5 weeks) Univ. Hosp. Disp. — Otology (5 wks.) *Univ. Hosp. 3-C*			
4.00 to 5.00					Obstetrics *Br. 2*	

• Pediatrics, January 17 to 20 and May 16 to 19, 1950.

The Junior Class will be divided into two sections—A and B. Each section reports to classes in keeping with the following schedule assignment, in which the letters represent the class sections and the numerals indicate the schedules to be followed for the periods shown.

Schedule Assignment

Periods	*Sections and Schedules*
September 22, 1949 to January 21, 1950	A-1, B-2
January 30 to May 20, 1950	B-1, A-2

Locations of Lecture Halls, etc.

A. H.—Anatomical Hall, Upper Hall, N. E. Cor. Lombard and Greene Streets.
Amp.—Wilson Memorial Amphitheatre, New University Hospital, Eighth Floor.
B. C. H.—Baltimore City Hosps., 4940 Eastern Ave.
B. E. H.—Baltimore Eye, Ear and Throat Hospital, 1214 Eutaw Place.
Bressler—Bressler Building, 29 S. Greene Street.
C. H.—Chemical Hall, Lower Hall, N. E. Cor. Lombard and Greene Streets.
Univ. Hosp.—New University Hospital, Greene and Redwood Streets.
U. H. Disp.—Old Hospital Building, S. W. Cor. Lombard and Greene Streets.
31—31 South Greene Street.
Clinical Pathology Laboratory—Fifth Floor, Bressler Building.
Pathology Laboratory—31 South Greene Street, Special Rooms, Basement

Mid-Year Examinations—January 22-28, 1950
Final Examinations—Begin May 22, 1950

FOURTH YEAR SCHEDULE

SEPTEMBER 22, 1949 TO MAY 27, 1950

CLASS DIVISIONS*

Division 1†	Division 2	Division 3†	Division 4
Medicine and Medical Specialties (8 weeks) — Neurology Cardiology Gastro-Enterology Metabolism Allergy — Roentgenology	Pediatrics (4 weeks) — Psychiatry (4 weeks)	Surgery and Surgical Specialties (8 weeks) — Urology Neuro Surgery Otology, Rhinology and Laryngology Orthopaedics — Roentgenology	Obstetrics (2 weeks) — Gynecology Oncology (2 weeks) — Dermatology & Syphilology Ophthalmology Anesthesiology (4 weeks)

STUDENT GROUP ASSIGNMENTS

1st Quarter		3rd Quarter	
Sept. 22, 1949 to Nov. 19, 1949 (8 weeks)		Jan. 30, 1950 to March 25, 1950 (8 weeks)	
Groups 1, 2, 3, 4	to Division 1†	Groups 1, 2, 3, 4	to Division 3†
Groups 5, 6, 7, 8	to Division 2	Groups 5, 6, 7, 8	to Division 4
Groups 9, 10, 11, 12	to Division 3†	Groups 9, 10, 11, 12	to Division 1†
Groups 13, 14, 15, 16	to Division 4	Groups 13, 14, 15, 16,	to Division 2
2nd Quarter		**4th Quarter**	
Nov. 21, 1949 to Jan. 28, 1950 (8 weeks)		March 27, 1950 to May 27, 1950 (8 weeks)	
Groups 1, 2, 3, 4	to Division 2	Groups 1, 2, 3, 4	to Division 4
Groups 5, 6, 7, 8	to Division 3†	Groups 5, 6, 7, 8	to Division 1†
Groups 9, 10, 11, 12	to Division 4	Groups 9, 10, 11, 12	to Division 2
Groups 13, 14, 15, 16	to Division 1†	Groups 13, 14, 15, 16	to Division 3†

---

* The curriculum is arranged in 4 divisions, and the senior class in 16 groups.

† The curriculum of Divisions 1 and 3 is given at the University and Mercy Hospitals simultaneously. There are 4 groups (20 students) assigned to each division. Two groups or one half the students of each division are assigned work for 4 weeks at each hospital. For simplicity students belonging to the 2 groups having the lowest numbers in these division assignments report to the University Hospital, for the 1st 4 weeks. The 2 groups with the highest numbers report to Mercy. At the end of 4 weeks the students at the University Hospital report to Mercy and the groups at Mercy report to the University Hospital for a similar period, thus completing one division of work.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND COLLEGE OF PHYSICIANS AND SURGEONS

GRADUATES, JUNE 4, 1949

Abraham, Robert Auman, B.S.	Pennsylvania
Bachman, Leonard, B.S.	Maryland
Barnard, John William, B.S.	Maryland
Belkin, Joseph William	Connecticut
Benjamin, William Philip, A.B.	New York
Bennett, Sara Elizabeth, A.B.	North Carolina
Blundell, Albert Edward	Utah
Bradford, Edward	Georgia
Cline, James Alexander, III	Nebraska
Deringer, Florence Hurtt, B.S.	Maryland
Eubanks, Otha Albert, Jr.	North Carolina
Forman, Robert Blaine	Oregon
Fravel, Charles Richard	Virginia
Gill, Joseph Edward	Pennsylvania
Gorten, Martin Klaus, A.B.	New Jersey
Gray, Harry Williams	Maryland
Guido, Angelina, A.B.	West Virginia
Harris, James Radcliffe	Pennsylvania
Henderson, Charles Thomas	Illinois
Humphreys, Charles Wesley, Jr.	District of Columbia
Knabe, George William, Jr.	Michigan
Lewis, Thomas Earl	Pennsylvania
Lock, Burton Vernon	Maryland
London, Nathaniel Jacob	Maryland
Longley, George Henry	Maryland
Lukens, James Thomas	Pennsylvania
Malcarney, Alberta Rose, A.B.	California
Mattax, Harry McCoy	Maryland
Matthews, Mary Elizabeth, B.S.	North Carolina
May, Homer Woodrow, B.S.	Pennsylvania
McCord, Charles Frederic	Indiana
Middleton, Edmund Bishop	Rhode Island
Miller, Max Jay	Maryland
Moyer, John Lewis, III	Pennsylvania
Neumayer, Francis	Pennsylvania
Newell, Josephine Evelyn	North Carolina
Nicklas, Gilbert Lee, B.S.	Maryland
Panzarella, John Henry	New York
Parelhoff, Merrill Elliott	Maryland
Pittman, Robert Raikes, A.B.	North Carolina
Pleet, Jerome	Maryland
Raskin, Howard Frank	Maryland
Riddel, Clifford Thurston, Jr., A.B.	Virginia
Roehrig, Charles Burns	Massachusetts
Rosen, Robert Reuben, A.B.	North Carolina
Sarewitz, Albert Bernard	New Jersey
Scher, Jordan Mayer, A.B.	Maryland
Schnaper, Nathan, B.S.	Maryland
Schreiber, Richard David	Illinois
Sherrard, Margaret Lee, A.B.	West Virginia
Smith, Meredith Parks	Minnesota
Snider, Kenneth Bruce	Texas
Spittel, John Allen, Jr., B.S.	Maryland
Stahler, Earlin John	Pennsylvania
Stanfield, Elwin Eugene	California
Steckler, Robert Joseph, A.B.	Indiana
Stevenson, Edward Ward	Virginia
Strahan, John Franklin	Maryland
Tilley, Russell McFarlane, Jr.	New York
Timanus, James Kyner	Ohio
Tramer, Arnold	Maryland
Trettin, Gene Douglas	Maryland
Warnock, Robert George	Ohio
Watson, Frank Yandle	North Carolina
Welch, Elbert Sylvester	Alabama
Wolfe, Carolyn DeWitt, A.B.	New Jersey
Ziegler, John Bosley, A.B.	Maryland
Ziegler, Lillian Koch, B.S.	Maryland

HONORS

University Prize Gold Medal

John Allen Spittel, Jr.

Certificates of Honor

Harry McCoy Mattax
Merrill Elliott Parelhoff
Albert Bernard Sarewitz
Nathan Schnaper
George Henry Longley

The Dr. A. Bradley Gaither Memorial Prize

Harry McCoy Mattax

The William D. Wolfe Memorial Prize and Certificate of Proficiency

Charles Richard Fravel

INTERNSHIPS—GRADUATES OF JUNE 4, 1949

July 1, 1949–June 30, 1950

Abraham, Robert Auman	University Hospital, Baltimore, Md.
Bachman, Leonard	University Hospital, Baltimore, Md.
Barnard, John William	South Baltimore General Hospital, Baltimore, Md.
Belkin, Joseph William	St. Vincent's Hospital, Bridgeport, Conn.
Benjamin, William Philip	New York City Hospital, Welfare Island, N. Y.
Bennett, Sara Elizabeth	West Baltimore General Hospital, Baltimore, Md.
Blundell, Albert Edward	Kings County Hospital, Brooklyn, N. Y.
Bradford, Edward	Orange Memorial Hospital, Orlando, Fla.
Cline, James Alexander, III	Mercy Hospital, Baltimore, Md.
Deringer, Florence Hurtt	St. Vincent's Hospital, Bridgeport, Conn.
Eubanks, Otha Albert, Jr.	Baptist Memorial Hospital, Memphis, Tenn.
Forman, Robert Blaine	South Baltimore General Hospital, Baltimore, Md.
Fravel, Charles Richard	Mercy Hospital, Baltimore, Md.
Gill, Joseph Edward	U. S. Naval Hospital, Newport, R. I.
Gorten, Martin Klaus	Newark City Hospital, Newark, N. J.
Gray, Harry Williams	Garfield Memorial Hospital, Washington, D. C.
Guido, Angelina	University of Pittsburgh Medical Center, Pittsburgh, Penna.
Harris, James Radcliffe	Marine Hospital, Baltimore, Md.
Henderson, Charles Thomas	University Hospital, Baltimore, Md.
Humpheys, Charles Wesley, Jr.	Garfield Memorial Hospital, Washington, D. C.
Knabe, George William, Jr.	Baltimore City Hospitals, Baltimore, Md.
Lewis, Thomas Earl	Hurley Hospital, Flint, Mich.
Lock, Burton Vernon	Mercy Hospital, Baltimore, Md.
London, Nathaniel Jacob	Boston City Hospital, Boston, Mass.
Longley, George Henry	St. Vincent's Hospital, Bridgeport, Conn
Lukens, James Thomas	St. Vincent's Hospital, Bridgeport, Conn.
Malcarney, Alberta Rose	Baltimore City Hospitals, Baltimore, Md
Mattax, Harry McCoy	Jersey City Medical Center, Jersey City, N. J.
Matthews, Mary Elizabeth	Mercy Hospital, Baltimore, Md.
May, Homer Woodrow	Mercy Hospital, Baltimore, Md.
McCord, Charles Frederic	Edward W. Sparrow Hospital, Lansing, Mich.
Middleton, Edmund Bishop	University Hospital, Baltimore, Md.
Miller, Max Jay	Sinai Hospital, Baltimore, Md.
Moyer, John Lewis, III	George F. Geisinger Memorial Hospital, Danville, Penna.
Neumayer, Francis	Bryan Memorial Hospital, Lincoln, Nebr.
Newell, Josephine Evelyn	Rex Hospital, Raleigh, N. C.
Nicklas, Gilbert Lee	U. S. Naval Hospital, Portsmouth, Va.
Panzarella, John Henry	Mercy Hospital, Baltimore, Md.
Parelhoff, Merrill Elliott	Jewish Hospital of Brooklyn, Brooklyn, N. Y.
Pittman, Robert Raikes	Alleghany General Hospital, Pittsburgh, Penna.
Pleet, Jerome	South Baltimore General Hospital, Baltimore, Md.
Raskin, Howard Frank	Mercy Hospital, Baltimore, Md.
Riddel, Clifford Thurston	Mercy Hospital, Baltimore, Md.
Roehrig, Charles Burns	Boston City Hospital, Boston, Mass.
Rosen, Robert Reuben	Michael Reese Hospital, Chicago, Ill.

Sarewitz, Albert Bernard......Philadelphia General Hospital, Philadelphia, Penna.
Scher, Jordan Mayer........................Chelsea Naval Hospital, Boston, Mass.
Schnaper, Nathan..............................Marine Hospital, Baltimore, Md.
Schreiber, Richard David................St. Francis Hospital, Pittsburgh, Penna.
Sherrard, Margaret Lee..........................Mercy Hospital, Baltimore, Md.
Smith, Meredith Parks..........................St. Luke's Hospital, Chicago, Ill.
Snider, Kenneth Bruce............Garfield Memorial Hospital, Washington, D. C.
Spittel, John Allen, Jr.........................Mercy Hospital, Baltimore, Md.
Stahler, Earlin John.....................Allentown Hospital, Allentown, Penna.
Stanfield, Elwin Eugene..........White Memorial Hospital, Los Angeles, Calif.
Steckler, Robert Joseph. .San Joaquin Valley General Hospital, French Camp, Calif.
Stevenson, Edward Ward..............Baptist Memorial Hospital, Memphis, Tenn.
Strahan, John Franklin......................University Hospital, Baltimore, Md.
Tilley, Russell McFarlane, Jr.....Garfield Memorial Hospital, Washington, D. C.
[4]Timanus, James Kyner.....................St. Luke's Hospital, Cleveland, Ohio
Tramer, Arnold..................................Sinai Hospital, Baltimore, Md.
Trettin, Gene Douglas..........................Mercy Hospital, Baltimore, Md.
Warnock, Robert George............Youngstown Hospital Asso., Youngstown, Ohio
Watson, Frank Yandle...........Charlotte Memorial Hospital, Charlotte, N. C.
Welch, Elbert Sylvester............Jefferson-Hillman Hospital, Birmingham, Ala.
Wolfe, Carolyn DeWitt............Charlotte Memorial Hospital, Charlotte, N. C.
Ziegler, John Bosley.......................U. S. Marine Hospital, Norfolk, Va.
Ziegler, Lillian Koch.......................U. S. Marine Hospital, Norfolk, Va.

MATRICULATES

SENIOR CLASS, SEPTEMBER 16, 1948 TO JUNE 4, 1949

Abraham, Robert Auman, *B.S., Franklin and Marshall College, 1945*......Pennsylvania
Bachman, Leonard, *B.S., Franklin and Marshall College, 1946*...............Maryland
Barnard, John William, *B.S., Milligan College, 1937*......................Maryland
Belkin, Joseph William, *College of the Holy Cross*......................Connecticut
Benjamin, William Philip, *A.B., Brooklyn College, 1943*................New York
Bennett, Sara Elizabeth, *A.B., Randolph-Macon, 1930; University of North Carolina School of Medicine, September 1945–June 1947*........North Carolina
Blundell, Albert Edward, *Temple University*..............................Utah
Bradford, Edward, *West Virginia College; University of North Carolina; University of North Carolina School of Medicine, September 1945–June 1947*...Georgia
Cline, James Alexander, III, *University of Pennsylvania*.................Nebraska
Deringer, Florence Hurtt, *B.S., Washington College, 1945*...............Maryland
Eubanks, Otha Albert, Jr., *Duke University*.......................North Carolina
Forman, Robert Blaiee, *University of Oregon*...............................Oregon
Fravel, Charles Richard, *Cornell University*...............................Virginia
Gill, Joseph Edward, *Union College*.................................Pennsylvania
Gorten, Martin Klaus, *A.B., Western Maryland College, 1943*..........New Jersey
Gray, Harry Williams, *Duke University*...............................Maryland
Guido, Angelina, *A.B., West Virginia University, 1945; West Virginia University School of Medicine, September 1945–June 1947*.................West Virginia
Harris, James Radcliffe, *Temple University*..........................Pennsylvania
Henderson, Charles Thomas, *The Johns Hopkins University*.................Illinois
Humphreys, Charles Wesley, Jr., *Duke University*............District of Columbia
Knabe, George William, Jr., *The Johns Hopkins University*..............Michigan
Lewis, Thomas Earl, *Pennsylvania State College*......................Pennsylvania
Lock, Burton Vernon, *The Johns Hopkins University*....................Maryland
London, Nathaniel Jacob, *The Johns Hopkins University*.................Maryland

---

[4] Did not Report—Illness.

Longley, George Henry, *University of Minnesota*	Maryland
Lukens, James Thomas, *Vanderbilt University*	Pennsylvania
Malcarney, Alberta Rose, *A.B., University of Southern California, 1944*	California
Mattax, Harry McCoy, *Western Maryland College*	Maryland
Matthews, Mary Elizabeth, *B.S., North Carolina State 1936; M.S., University of North Carolina, 1945; University of North Carolina, School of Medicine, September 1945–June 1947*	North Carolina
May, Homer Woodrow, *B.S., University of Pittsburgh, 1944*	Pennsylvania
McCord, Charles Frederic, *Pennsylvania State College*	Indiana
Middleton, Edmund Bishop, *The Johns Hopkins University*	Rhode Island
Miller, Max Jay, *University of Richmond*	Maryland
Moyer, John Lewis, III, *University of Minnesota*	Pennsylvania
Neumayer, Francis, *University of Maryland*	Pennsylvania
Newell, Josephine Evelyn, *University of the State of South Carolina*	North Carolina
Nicklas, Gilbert Lee, *B.S., Franklin and Marshall College, 1946*	Maryland
Panzarella, John Henry, *Fordham University*	New York
Parelhoff, Merrill Elliott, *University of Maryland*	Maryland
Pittman, Robert Raikes, *A.B., Wake Forest College, 1937; University of North Carolina, School of Medicine, September 1945–June 1947*	North Carolina
Pleet, Jerome, *Stanford University, University of Texas School of Medicine, September 1945–May 1946*	Maryland
Raskin, Howard Frank, *The Johns Hopkins University*	Maryland
Riddel, Clifford Thurston, Jr., *A.B., Bridgewater College, 1933*	Virginia
Roehrig, Charles Burns, *Vanderbilt University*	Massachusetts
Rosen, Robert Reuben, *A.B., University of North Carolina, 1945; University of North Carolina, School of Medicine, September 1945–June 1947*	North Carolina
Sarewitz, Albert Bernard, *University of Pennsylvania*	New Jersey
Scher, Jordan Mayer, *A.B., Wesleyan University, 1946*	Maryland
Schnaper, Nathan, *B.S., Washington College*	Maryland
Schreiber, Richard David, *Bethany College*	Illinois
Sherrard, Margaret Lee, *A.B., Seton Hill College, 1945*	West Virginia
Smith, Meredith Parks, *St. Lawrence University*	Minnesota
Snider, Kenneth Bruce, *University of Maryland*	Texas
Spittel, John Allen, Jr., *B.S., Franklin and Marshall College, 1944*	Maryland
Stahler, Earlin John, *University of Maryland*	Pennsylvania
Stanfield, Elwin Eugene, *University of Pennsylvania*	California
Steckler, Robert Joseph, *A.B., Evansville College, 1943*	Indiana
Stevenson, Edward Ward, *Duke University*	Virginia
Strahan, John Franklin, *Duke University*	Maryland
Tilley, Russell McFarlane, Jr., *University of Rochester*	New York
Timanus, James Kyner, *Oberlin College*	Ohio
Tramer, Arnold, *University of Maryland*	Maryland
Trettin, Gene Douglas, *Ursinus College*	Maryland
Warnock, Robert George, *Bates College*	Ohio
Watson, Frank Yandle, *Duke University*	North Carolina
Welch, Elbert Sylvester, *Duke University*	Alabama
Wolfe, Carolyn DeWitt, *A.B., Hollins College, 1945*	New Jersey
Ziegler, John Bosley, *A.B., Gettysburg College, 1942*	Maryland
[3]Ziegler, Lillian Koch, *B.S., University of Maryland*	Maryland

JUNIOR CLASS, SEPTEMBER 16, 1948 TO JUNE 4, 1949

Anderson, William Andrew, *The Johns Hopkins University*	Maryland
Bacon, John Louis, *Wagner College*	New York
Bagley, Charles, *B.S., Loyola College, 1945*	Maryland
Baumann, Wilbur Nelson, *University of Maryland*	Maryland
Bisgyer, Jay Lewis, *University of Pennsylvania*	District of Columbia
Bleecker, Harry Harlan, Jr., *University of California*	California
Borges, Francis Joseph, *University of Maryland*	Maryland
Bradshaw, Raymond, Jr., *B.S., University of Maryland, 1943*	Maryland
Bronushas, Joseph Benedict B., *B.S., Loyola College, 1946*	Maryland
Burkey, Fred Jamison, *St. Francis College*	Maryland

---

[3] Returned to Senior Class for Session September 17, 1948–June 4, 1949.

Chelton, Louis Guy, *Gettysburg College*	Maryland
Coller, Jerome Joel, *A.B., The Johns Hopkins University, 1946*	Maryland
Corpenning, Tom Nye, *University of North Carolina*	North Carolina
Cowen, Joseph Robert, *The Johns Hopkins University*	Maryland
Cracraft, William Atkinson, *B.S., Virginia Military Institute, 1939*	West Virginia
Daly, Harold Lawrence, Jr., *University of Maryland*	Maryland
Daly, Miriam Abbott Shamer, *A.B., Goucher College, 1946*	Maryland
Deitz, Leonard Loeb, *A.B., University of North Carolina, 1946*	Maryland
Demarest, Elinor Weed, *A.B., Randolph-Macon Woman's College, 1946*	Maryland
Demarest, Lawrence Mann, *B.S., Bowdoin College, 1945*	New York
Demmy, Nicholas, *B.S., University of Pittsburgh, 1942*	Pennsylvania
Edmunds, Frederick Thomas, *B.S., Hampden-Sydney College, 1941*	West Virginia
Googins, Charles George, *B.S., University of Maryland*	Kansas
Gould, Virginia Marie, *B.S., Nazareth College, 1941*	New York
Greenstein, George Herbert, *A.B., The Johns Hopkins University, 1941*	Maryland
Hamberry, Leonard Gerard, *A.B., Loyola College, 1940*	Maryland
Hawkins, George Kenneth, *B.S., Upsala College, 1943*	New Jersey
Healy, John Clauson, *University of Connecticut*	Connecticut
Henson, Stanley Willard, Jr., *B.S., Oklahoma A. & M. College, 1945*	Maryland
Heuman, Philip Walter, *B.S., University of Michigan, 1941*	Maryland
Hofsteter, Grace, *College of Wooster*	Ohio
Hoyt, Irvin Gorman, *A.B., St. Johns College, Annapolis, 1939*	Maryland
Huffer, Sarah Virginia, *B.S., University of Maryland, 1940*	Maryland
Husted, Harriet Lamont, *A.B., Wells College, 1944*	New Jersey
Hyle, John Charles, *B.S., Loyola College, 1942*	Maryland
Ibsen, Maxwell, *A.B., The Johns Hopkins University, 1939; A.M., University of Pennsylvania, 1940*	Pennsylvania
Iten, George Joseph, *A.B., Goshen College, 1946*	California
Jensen, Roy David, *B.S., University of Nevada, 1941*	Nevada
Kasik, Frank Thomas, *University of Maryland*	Maryland
Kelley, Gordon William, *University of Maryland*	Maryland
Knight, Virgil Ellis, *A.B., University of Missouri, School of Medicine, Sept. 1946 to June 1948*	Missouri
Kuehn, Frank Gustav, *A.B., University of North Carolina, School of Medicine, Sept. 1946 to June 1948*	Maryland
Lewis, Thomas Franklin, Jr., *A.B., Western Maryland College, 1941*	Maryland
Lichtenberg, Joseph David, *A.B., The Johns Hopkins University, 1943*	Maryland
Martin, George William, Jr., *University of Delaware*	Delaware
McElvain, Wilbert Harding, *B.S., Grove City College, 1943*	Pennsylvania
Medairy, Mary Veronica, *A.B., College of Notre Dame, 1943*	Maryland
Miller, Dorothea Anna, *B.S., Washington College, 1946*	Maryland
Miller, Robert Eugene, *A.B., Bridgewater College, 1943*	Maryland
Neal, Hunter Shainline, *Vanderbilt University*†	Pennsylvania
Noguera, Julio Tomas, *University of Puerto Rico*	Puerto Rico
O'Malley, Joseph Edward, *Colby College*	Maryland
Poling, Evangeline, *A.B., West Virginia University, 1945; A.M., Columbia University, 1946*	West Virginia
Rever, William Benjamin, Jr., *Cornell University*	Maryland
Reynaud, Louis Favrot, Jr., *Emory University*	Illinois
Richardson, Paul Frederick, *Baylor University*	Maryland
Righetti, Milton Raymond, *University of California*	California
Roth, Oliver Ralph, *University of Maryland*	Maryland
Rubin, Seymour Howard, *A.B., The Johns Hopkins University, 1946*	Maryland
Rudy, Norman Edward, *Fresno State College*	California
Sandler, Robert, *B.S., University of Maryland, 1943*	Maryland
Setterstrom, Sarah Anetta, *B.S., George Washington University, 1946*	Maryland
Shepherd, Frederick Parker, *A.B., Syracuse University, 1935*	Maryland
Simmons, Frederic Rudolph, Jr., *B.S., Loyola College, 1946*	Maryland
Sires, William Oscar, *Western Maryland College*	Maryland
Sklar, Allen Leon, *Western Maryland College*	Maryland
Smith, Morton, *University of Maryland*	Maryland
Sosnowski, Andrew Raymond, *B.S., Loyola College, 1945*	Maryland
Spaulding, Raymond Charles, Jr., *B.S., John B. Stetson University, 1943*	Florida
Startzman, Henry Hollingsworth, Jr., *Loyola College*	Maryland

---

† Was in attendance as Sophomore 1947–48, but was not so listed.

Storm, Mary Elizabeth, *A.B., Swarthmore College, 1946*	Maryland
Sulka, Casimir Michael, *Loyola College*	Illinois
Thibadeau, Robert Torndorff, *B.S., University of Maryland, 1945*	Maryland
Thompson, William Wesley, *B.S., Washington College, 1938*	Maryland
Toms, Bate Carpenter, Jr., *B.S., University of North Carolina, School of Medicine, Sept. 1946 to June 1948*	North Carolina
Upton, Albert Louis, *A.B., University of California, 1942*	California
Van Goor, Kornelius, *Calvin College*	New Jersey
Vicens, Enrique A., *University of Puerto Rico*	Puerto Rico
White, Fowler Felix, *B.S., Trinity College, 1942*	Connecticut
Wilson, Clifford Edward, Jr., *Bowdoin College*	Connecticut
Wolf, Ernest Simon, *University of Maryland*	Maryland
Yeager, William Howard, Jr., *B.S., University of Maryland, 1944*	Maryland

SOPHOMORE CLASS, SEPTEMBER 16, 1948 TO JUNE 4, 1949

Arthur, Robert Key, Jr., *Mercer University*	Georgia
Barthel, John Paul, *Western Maryland College*	Maryland
Beardsley, Earl Miller, *University of Maryland*	Maryland
Bell, Arthur Keith, *A.B., Oberlin College, 1947*	Maryland
Bilder, Joseph, Jr., *B.S., University of Akron, 1944*	Ohio
Birely, Beverly Robert, *University of Maryland*	Maryland
Blades, Nancy, *A.B., Connecticut College, 1947*	New Jersey
Bossard, John Wesley, *A.B., Duke University, 1947*	Maryland
Brannon, John Vandale, *Fairmont College*	West Virginia
Buell, John Russell, Jr., *University of Maryland*	Maryland
Christopher, Russell Lee, *A.B., Bowdoin College, 1947*	Massachusetts
Clemmens, Raymond Leopold, *B.S., Loyola College, 1947*	Maryland
Coffman, Kaohlin Miner, *A.B., Western Maryland College, 1947*	Pennsylvania
Cohen, Solomon, *A.B., University of Denver, 1947*	Maryland
Curanzy, Raymond Ralph, *Juniata College*	Pennsylvania
Deckelbaum, Joseph, *University of Maryland*	Maryland
Dettbarn, Ernest Albert, *B.S., Randolph-Macon, 1947*	Maryland
Donner, Leon, *B.S., State Teachers College, 1942*	Maryland
Dudley, Winston Clark, *A.B., Oberlin College, 1943*	Massachusetts
Dunn, George Mitchell, Jr., *George Washington University*	District of Columbia
Edwards, David Everett, *University of Maryland*	District of Columbia
Edwards, William Hunter, Jr., *A.B., Johns Hopkins University, 1940*	Maryland
Esmond, William George, *B.S., University of Maryland, 1940*	Maryland
Evans, Otis Druell, Jr., *B.S., Davidson College, 1947*	North Carolina
Ferguson, Charles Kirkpatrick, *Muskingum College*	Kansas
Fitzgerald, Joseph Carroll, *Middlebury College*	Maryland
Fullilove, Jack, *University of Georgia*	Georgia
Gallaher, James Patrick, *Ohio Wesleyan University*	West Virginia
Garcia-Palmieri, Mario Ruben, *University of Puerto Rico*	Puerto Rico
Gates, John Butler, *University of Wisconsin*	Wisconsin
Gordon, Benjamin Dichter, *Amherst College*	New York
Hatem, Frederick Joseph, *Georgetown University*	Maryland
Hopkins, Robert Charles, *B.S., Allegheny College, 1946*	Pennsylvania
Johnson, Frederick Miller, *B.S., University of Maryland, 1943*	District of Columbia
Johnson, Wallace Edward, *Wesleyan University*	New Hampshire
Kaschel, Paul Edward, *A.B., Wheaton College, 1947*	New Jersey
Kindt, Willard Freed, *Muhlenberg College*	Pennsylvania
King, Victor Francis, *University of Maryland*	Maryland
Kipnis, David Morris, *A.B., Johns Hopkins University, 1945*	Maryland
Knipp, Harry Lester, *Loyola College*	Maryland
Kramer, Howard Calvin, *University of Maryland*	Maryland
Lamb, William Eugene, *B.S., University of Florida, 1947*	Florida
Lanning, Theodore Reuney, *B.S., Springfield College*	New Jersey
Leibman, Jack, *A.B., Johns Hopkins University, 1947*	Maryland
Ley, Leo Henry, Jr., *St. Mary's College of Maryland*	Maryland
Lister, Leonard Melvin, *Loyola College*	Maryland
Love, Robert George, *B.S., Massachusetts State College, 1947*	Massachusetts
MacDonald, James Melvin, *B.S., Loyola College, 1947*	Maryland
McFadden, Earl Boyd, *B.S., University of Maryland, 1947*	Maryland
McFadden, John William, *Mt. Union College*	Ohio

McGrady, Charles Winifred, Jr., *A.B., Emory University, 1947*	Georgia
Mendez-Bryan, Ricardo Tomas, *University of Puerto Rico*	Puerto Rico
Metcalf, John Shelby, Jr., *University of California*	California
Mosser, Robert Schaaf, *University of Maryland*	Maryland
Mutter, Arthur Zelig, *Franklin & Marshall*	Maryland
Myers, Donald Johnson, *B.S., Bethany College, 1934*	Ohio
Nygren, Edward Joseph, *A.B., Western Maryland College, 1947*	Maryland
Orth, John Stambaugh, *University of Maryland*	Maryland
Packard, Douglas Richard, *University of Maryland*	Maryland
Pencheff, Dorris Marie, *A.B., University of California, 1946*	California
Perilla, Frank Robert, *B.S., University of Maryland*	Maryland
Perry, Henry David, Jr., *A.B., Emory University, 1947*	Florida
Reeser, Guy McClelland, Jr., *A.B., Western Maryland College, 1947*	Maryland
Reeves, Henry Gray, Jr., *B.S., Wake Forest College, 1947*	North Carolina
Reilly, Kathleen Margaret, *B.S., Long Island University, 1947*	New York
Rex, Eugene Braiden, *Vanderbilt College*	Colorado
Reynolds, Georgia, *A.B., Western Maryland College, 1947*	Maryland
[1]Rice, Robert Milton, *B.S., Dickinson College, 1947*	Maryland
Rombro, Marvin Jay, *A.B., Bucknell University, 1947*	Maryland
Rowland, Harry Shepard, Jr., *A.B., Wesleyan University, 1947*	New Jersey
Saavedra-Amador, Armando, *University of Puerto Rico*	Puerto Rico
Scott, Roger David, *University of Virginia*	Florida
Scully, John Thorsen, *Indiana University*	Indiana
Shea, William Harold Holland, *B.S., Loyola College*	Maryland
Sherry, Samuel Norman, *University of Maryland*	Maryland
Sipple, Edward N., *Earlham College*	Maryland
Skipton, Roy Kennedy, *B.S., University of Maryland, 1942*	Maryland
Solomon, David Milton, *University of Maryland*	Maryland
Stone, John Hoskins, *University of Maryland*	Maryland
Tobias, Richard Boyd, *B.S., Bucknell University, 1947*	Pennsylvania
Twigg, Homer Lee, Jr., *University of Maryland*	Maryland
Udel, Melvin, *A.B., University of Maryland*	Maryland
Venrose, Robert James, *A.B., University of Michigan, 1946*	Ohio
Watson, Charles Polk, Jr., *A.B., West Virginia University, 1947*	West Virginia
Weekley, Robert Dean, *B.S., Heidelberg College, 1947*	Ohio
Wheelwright, Harvey Prarse, *Brigham Young University*	Utah
Williams, Charles Ray, *A.B., Gettysburg College, 1947*	Maryland
York, Shelley Clyde, Jr., *B.S., Guilford College*	North Carolina
Young, Calvin Lessey, *A.B., Haverford College, 1947*	Maryland

FRESHMAN CLASS, SEPTEMBER 16, 1948 TO JUNE 4, 1949

Adams, Charles Baird, Jr., *University of Maryland*	Maryland
Adelstein, Benjamin Alfred, *A.B., University of Pennsylvania, 1948*	Pennsylvania
Adkins, Charles Glen, *West Virginia University*	West Virginia
Ahlquist, Richard Elmer, Jr., *A.B., Stanford University, 1948*	Washington
Alderman, George Carl, Jr., *Loyola College*	Maryland
[1]Allen, James Leon, *A.B., West Virginia University, 1948*	West Virginia
Andrews, James William, *B.S., Muskingum College, 1948*	Ohio
[1]Armstrong, Thomas Henry, *A.B., St. Anselm's College, 1948*	New Hampshire
Atkins, Raymond Melvin, *University of Maryland*	Maryland
Bakal, Daniel, *B.S., Loyola College, 1948*	Maryland
Baker, Timothy Danforth, *A.B., Johns Hopkins University, 1948*	Maryland
Bergofsky, Edward Harold, *University of Maryland*	Maryland
Berrios, Osvaldo, *University of Puerto Rico*	Puerto Rico
Bridges, Jack Arthur, *University of Maryland*	Maryland
Brooks, James Burch, *B.S., Loyola College, 1948*	Maryland
Brown, William Morris, Jr., *A.B., Mercer University, 1948*	Georgia
[2]Buchness, George Franklin, *B.S., Loyola College, 1948*	Maryland
Carroll, John Edward, Jr., *Loyola College*	Maryland
Clyman, Daniel, *B.S., University of Maryland, 1948*	Maryland

---

[1] Did not complete the year.

[2] Withdrew September 17, 1948.

Cohen, Phin, *Duke University*	Maryland
Culpepper, Stuart Pitner, *B.S., University of Georgia, 1948*	Florida
[1]Delea, Catherine Sophia, *A.B., College of Notre Dame of Maryland, 1948*	Maryland
Devlin, Andrew Joseph, *B.S., Gonzaga University, 1948*	Washington
DiGiovanni, Anthony John, *A.B., Johns Hopkins University, 1948*	Maryland
Douglas, Robert Arnold, *B.S., J. B. Stetson University, 1948*	Florida
Douglass, Robert Corl, Jr., *B.S., University of Toledo, 1947*	Ohio
Dunford, William Stanley, Jr., *B.S., Brigham Young University, 1948*	Utah
Eakle, Burke Eldridge, *West Virginia University*	West Virginia
Eckert, Herbert Lewis, *University of Maryland*	Maryland
Egbert, Lawrence Deems, Jr., *A.B., Johns Hopkins University, 1948*	Maryland
Elgin, Lee William, Jr., *University of Florida*	Florida
Elliott, Charles Stanley, *Emory University*	Florida
Feski, Joseph Paul, *University of Pittsburgh*	Pennsylvania
Fine, Jack, *University of Maryland*	Maryland
Foley, Michael Joseph, *West Virginia University*	West Virginia
Fritz, Louis Albert, *B.S., Loyola College, 1948*	Maryland
[1]Fuccy, Mary Russell, *A.B., College of Notre Dame of Maryland, 1948*	West Virginia
Gebhardt, Robert William, *University of Maryland*	Maryland
Gislason, Paul Harold, *A.B., University of North Dakota, 1948*	North Dakota
Gonzalez, Luis Felipe, *University of Maryland*	Puerto Rico
Gore, Jay Calvin, *A.B., Western Maryland College, 1948*	Maryland
Grabill, James Rodney, *Georgetown University, American University*	Maryland
Graybeal, Clarence Edward, *University of Maryland*	Maryland
Greco, William Richard, *University of Notre Dame, University of Maryland*	Maryland
Grubb, Robert Alvin, *University of Maryland*	Maryland
Hankoff, Leon Dudley, *University of Maryland*	Maryland
Heimer, William Lenox, *B.S., University of Maryland, 1948*	Maryland
Holmes, Charles Martin, *University of Miami*	Maryland
[1]Hopkins, Thomas Chattle, Jr., *B.S., Washington College, 1948*	Maryland
Houck, Romulus Vance, Jr., *University of Maryland*	Maryland
Hudgins, William Baird, *A.B., Emory University, 1948*	Georgia
Hunter, DeWitt Talmadge, Jr., *B.S., U. S. Naval Academy, 1945, University of Maryland*	Virginia
Hyatt, Irvin, *University of Maryland*	Maryland
Keller, Franklin Lloyd, *A.B., Gettysburg College, 1945*	Maryland
Kline, Frank Menefee, *University of Maryland*	Maryland
Knell, Joseph Anthony, Jr., *A.B., Loyola College, 1948*	Maryland
Krager, John Martin, *B.S., Loyola College, 1948*	Maryland
Kramer, Irving, *New York University*	Maryland
Krieger, Morton Morris, *Maryland State Teachers College, University of Maryland*	Maryland
Lapp, Herbert Walter, *Seton Hall College*	New Jersey
Lightbody, Charles Harry, *A.B., Colby College, 1948*	Maine
Mathews, William Allen, *Westminster College, Wittenberg College*	Ohio
McKay, John Nelson, *Ohio Wesleyan University, Gettysburg College*	Maryland
Mullins, Laurel Virginia, *A.B., Westhampton College*	Maryland
Olsen, Richard Young, *A.B., University of California, 1948*	California
Perry, Benton Bloch, *B.S., University of Chicago, 1947, University of Maryland*	Maryland
Pillsbury, William Andrew, Jr., *University of Oregon, Loyola College*	Maryland
Potter, Vance Edward, *Potomac State, University of Maryland*	Maryland
Rabinowich, Malcolm Lee, *University of Maryland*	Maryland
Ramirez-Santisteban, Gilberto, *University of Puerto Rico*	Puerto Rico
Rappeport, Jonas Ralph, *University of Maryland*	Maryland
Rasmussen-Taxdal, David Samuel, *Lehigh Univ., Bucknell, Cornell and University of Maryland*	Pennsylvania
Reed, Julian Ward, *Miami University, University of Maryland*	Maryland
[1]Reynolds, Charles Emory, Jr., *A.B., Gettysburg College, 1948*	Maryland
Rosson, William Daniel, *University of Maryland*	Maryland

---

[1] Did not complete the year.

Schimmel, Bella Faye, *B.S., University of Michigan, 1948*..................Maryland
Sharrett, John Oliver, *University of Virginia*..........................Maryland
Shoff, Mahlon James, *A.B., University of Delaware, 1948*..................Delaware
Sindler, Richard Arnold, *A.B., Johns Hopkins University, 1948*............Maryland
Smith, George Herbert, *A.B., Clark University, 1948*.......................Maine
[1]Smock, Walter Wilson, *University of Scranton*.........................Pennsylvania
Smoot, Aubrey Cannon, Jr., *University of Delaware*.......................Delaware
Spritz, Norton, *A.B., Johns Hopkins University, 1948*.....................Maryland
Stambler, Alvin Abraham, *University of Maryland*.........................Maryland
Stovall, Robert McRae, Jr., *Idaho State College*............................Idaho
Thomas, Quinten Moore, *A.B., University of California, 1948*...........California
Trace, Robert James, *University of Wisconsin*...........................Wisconsin
Traugott, Ursula Erika, *A.B., Wellesley College, 1948*....................Maryland
Vicens, Carlos Nathaniel, *B.S., University of Puerto Rico, 1948*..........Puerto Rico
Wallace, Scott Pyper, *A.B., University of Utah, 1948*.......................Utah
Walsh, Harry Martin, *B.S., Washington College, 1948*......................Maryland
[1]Walton, Leander Bertram, *West Virginia University*................West Virginia
Warren, Bryan Pope, Jr., *University of Maryland*..........................Maryland
Weeks, Howard Nelson, *B.S., Franklin & Marshall, 1948*...................Maryland
Wildberger, Albert John, *A.B., Western Maryland College, 1948*..........Maryland
Wolfel, Donald Anthony, *University of Maryland*...........................Maryland
Wolverton, William Roger, *A.B., West Virginia University, 1948*......West Virginia
[2]Worgan, Malcolm Sinclair, *University of Maryland*......................Maryland

STUDENTS IN ART AS APPLIED TO MEDICINE

Thomas McClelland Stevenson......................................Virginia

INTRAMURAL POSTGRADUATE STUDENTS

July 1, 1948 to June 30, 1949

General Anatomy "A"

Brockman, Hiram L., M.D.	Greer, South Carolina	*Medical College of S. C.*

Surgical Anatomy "B"

Banfield, Ernest E., M.D.	Baltimore, Maryland	*University of Oregon*
Brockman, Hiram L., M.D.	Greer, South Carolina	*Medical College of S. C.*
Burleson, Norris M., M.D.	Port Allegany, Pa.	*Duke Medical School*
Cerasano, Ernest A., M.D.	Schenectady 3, N. Y.	*Albany Medical College*
Cole, Norman J., M.D.	Baltimore, Maryland	*Univ. of California*
Fisher, William H., M.D.	Perry Point, Md.	*Duke Medical School*
George, J. E., M.D.	Roanoke, Virginia	*University of Virginia*
Greene, John P., M.D.	Rumford, Oxford, Maine	*Johns Hopkins University*
Hawkins, John F., Jr., M.D.	Baltimore, Maryland	*Johns Hopkins University*
Kagan, Harold N., M.D.	Washington, D. C.	*Geo. Wash. University*
Koontz, Emery R., M.D.	Aberdeen, Md.	*University of Michigan*
Lane, Julian S., M.D.	Leonardtown, Md.	*New York University*
McGoogan, Malcolm T., M.D.	Fitzgerald, Ben Hill, Ga.	*University of Maryland*
Vanni, Frank L., M.D.	Baltimore, Maryland	*New York Medical College*

Basic Sciences as applied to Obstetrics and Gynecology

Bodine, Charles D., M.D.	Oklahoma City, Okla.	*University of Oklahoma*
Rogers, Robert A., M.D.	Steubenville, Ohio	*Temple University*
Tinker, F. X. P., M.D.	Glen Burnie, Md.	*University of Maryland*

---

[1] Did not complete the year.

[2] Withdrew on November 30, 1948.

Gynecology, Oncology and Female Urology

Kurashige, Wilfred Hitoshi, M.D.	Naalehu, Hawaii	*Northwestern University*

Pathology (neuropathology)

Pfeil, Edgar T. Jr., M.D.	Baltimore, Maryland	*University of Maryland*

Pathology (Special)

Alvarez, Joseph, M.D.	Baltimore, Maryland	*Temple University*
Burns, Herbert, M.D.	Baltimore, Maryland	*Tufts Medical School*
Oliver, Norman, M.D.	Baltimore, Maryland	*Long Island College of Med.*

EXTRAMURAL POSTGRADUATE STUDENTS

Physicians Attending 1948–1949 Extension Lectures

Course Given at Frederick Hotel, Frederick, Maryland

James H. Allison, M.D.	Emmitsburg, Md.	*University of Pa.*
Howard W. Ash, M.D.	Frederick, Maryland	*University of Pa.*
R. W. Baer, M.D.	Frederick, Maryland	*Johns Hopkins Univ.*
Ralph W. Ballin, M.D.	State Sanitorium, Md.	*Univ. of Cologne, Germany*
S. Luther Bare, M.D.	Westminster, Md.	*University of Md.*
C. Billingslea, M.D.	Westminster, Md.	*University of Md.*
M. Franklin Birely, M.D.	Thurmont, Md.	*University of Md.*
W. P. Bradley, Jr., M.D.	Taneytown, Md.	*Hahnemann Med. School*
A. Talbott Brice, M.D.	Jefferson, Md.	*University of Md.*
Charles H. Conley, Jr., M.D.	Frederick, Maryland	*University of Va.*
John M. Culler, M.D.	Frederick, Maryland	*University of Md.*
H. V. Ellington, M.D.	Camp Dietrick, Md.	*Not given*
Carroll Easterday, M.D.	Walkersville, Md.	*Med. College of Va.*
H. Laurence Fahrney, M.D.	Frederick, Md.	*Jefferson Medical School*
Jesse S. Fifer, M.D.	Frederick, Md.	*University of Md.*
Chas. R. Foutz, M.D.	Westminster, Md.	*University of Md.*
J. Stanley Grabill, M.D.	Mt. Airy, Md.	*University of Md.*
Jas. K. Gray, M.D.	Thurmont, Md.	*University of Va.*
T. W. Green, M.D.	Camp Dietrick, Md.	*Not given*
J. Elmer Harp, M.D.	Middletown, Md.	*University of Md.*
Reuben Hoffman, M.D.	Henryton, Md.	*University of Md.*
James P. Kerr, M.D.	Damascus, Md.	*University of Md.*
Thomas H. Legg, M.D.	Union Bridge, Md.	*University of Md.*
James T. Marsh, M.D.	Westminster, Md.	*University of Md.*
Robert S. McVaugh, M.D.	Taneytown, Md.	*University of Va.*
John H. Messler, M.D.	Union Bridge, Md.	*University of Md.*
A. A. Pearre, M.D.	Frederick, Md.	*University of Va.*
Charles E. Pruitt, M.D.	Brunswick, Md.	*University of Md.*
Thomas H. Quill, M.D.	Frederick, Maryland	*Georgetown Univ.*
M. E. Robertson, M.D.	Carroll County, Md.	*Not given*
Wm. Schnauffer, Jr., M.D.	Frederick, Md.	*Med. Coll. of Va.*
L. R. Schoolman, M.D.	Frederick, Md.	*University of Md.*
H. J. Slusher, M.D.	Frederick, Md.	*University of Md.*
J. G. F. Smith, M.D.	Brunswick, Md.	*University of Md.*
James E. Stoner, Jr., M.D.	Walkersville, Md.	*University of Md.*
Bernard O. Thomas, Jr., M.D.	Frederick, Md.	*University of Md.*
Bernard O. Thomas, Sr., M.D.	Frederick, Md.	*University of Md.*
James B. Thomas, M.D.	Frederick, Md.	*Johns Hopkins Univ.*
Edward P. Thomas, M.D.	Frederick, Md.	*University of Md.*

A. Weedom, M.D.	Camp Dietrick, Md.	*Not given*
Charles Whitaker, M.D.	Clarksville, Md.	*Not given*
Byron D. White, M.D.	Frederick, Md.	*Jefferson Med. School*
Arthur F. Woodward, M.D.	Frederick, Md.	*University of Md.*
Frank D. Worthington, M.D.	Frederick, Md.	*Johns Hopkins Univ.*

Course Given at Prince George's General Hospital, Cheverly, Maryland

P. J. Bean, M.D.	Great Mills, Md.	*University of Maryland*
Samuel Borssuck, M.D.	Annapolis, Md.	*Univ. of Tuebinger, Germany*
William Brainin, M.D.	Capitol Heights, Md.	*Geo. Washington Med. School*
Thos. A. Christensen, M.D.	College Park, Md.	*Georgetown University*
David Stanford Clayman, M.D.	Riverdale, Md.	*University of Md.*
Aaron Deitz, M.D.	Hyattsville, Md.	*Jefferson Med. School*
Wolcott L. Etienne, M.D.	College Park, Md.	*Geo. Wash. Univ.*
Ronald Fleischer, M.D.	Hyattsville, Md.	*Univ. of Paris, France*
Irvin M. Grassgreen, M.D.	Mt. Rainier, Md.	*Tulane University*
W. Allen Griffith, M.D.	Berwyn, Md.	*Univ. of Md.*
George J. Hageage, M.D.	Cottage City, Md.	*Georgetown Med. School*
Lloyd W. Hughes, M.D.	Riverdale, Md.	*Hahnemann Med. School*
Page C. Jett, M.D.	Prince Frederick, Md.	*Univ. of Md.*
Louis M. Jimal, M.D.	Cottage City, Md.	*Georgetown Univ.*
Julius Kauffman, M.D.	Bladensburg, Md.	*Geo. Wash. Univ.*
Oscar Lavine, M.D.	Mt. Rainier, Md.	*Geo. Wash. Univ.*
John Thomas Maloney, M.D.	Cheverly, Md.	*Georgetown Univ.*
Robert S. McCeney, M.D.	Laurel, Md.	*University of Md.*
George H. McLain, M.D.	Washington, D. C.	*Geo. Wash. Univ.*
Helene D. Michel, M.D.	Hyattsville, Md.	*Johns Hopkins Univ.*
W. B. Moyers, M.D.	Mt. Rainier, Md.	*University of Md.*
E. Peyton Ritchings, M.D.	Annapolis, Md.	*University of Md.*
Edith Rodler, M.D.	Annapolis, Md.	*Basle, Switzerland*
Albert Roth, M.D.	Riverdale, Md.	*Univ. of London*
James G. Sasscer, M.D.	Upper Marlboro, Md.	*Univ. of Md.*
Robert B. Sasscer, M.D.	Upper Marlboro, Md.	*Univ. of Md.*
Paul Clopton VanNatta, M.D.	Washington, D. C.	*Geo. Wash. Univ.*
John Warren, M.D.	Laurel, Md.	*University of Md.*
Dayton O. Watkins, M.D.	Hyattsville, Md.	*University of Md.*
G. J. Weems, M.D.	Huntington, Md.	*University of Md.*
Hans Wodak, M.D.	Greenbelt, Md.	*University of Prague*

Course Given at Peninsula General Hospital, Salisbury, Md.

H. A. Briele, M.D.	Salisbury, Md.	*University of Md.*
William Emrich, M.D.	Hebron, Md.	*University of Md.*
Charles T. Fisher, M.D.	Salisbury, Md.	*University of Md.*
J. Leland Fox, M.D.	Seaford, Del.	*Jefferson Med. School*
David J. Gilmore, M.D.	Salisbury, Md.	*Univ. of Pa.*
Robert J. Gore, M.D.	Salisbury, Md.	*University of Md.*
Fred R. Gramse, M.D.	Salisbury, Md.	*George Washington Univ.*
William D. Gray, M.D.	Salisbury, Md.	*University of Pa.*
Carrie I. Hearn, M.D.	Salisbury, Md.	*London Univ.*
Seth H. Hurdle, M.D.	Salisbury, Md.	*University of Va.*
Phillip A. Insley, M.D.	Salisbury, Md.	*University of Md.*
H. S. Kuhlman, M.D.	Sharptown, Md.	*University of Md.*

Lee L. Lawry, M.D.	Fruitland, Md.	*Temple Univ.*
William B. Long, M.D.	Salisbury, Md.	*University of Md.*
John W. Lynch, M.D.	Seaford, Delaware	*Long Island College*
Hunter R. Mann, M.D.	Salisbury, Md.	*University of Va.*
Charles M. Moyer, M.D.	Salisbury, Md.	*Temple University*
R. M. Nock, M.D.	Salisbury, Md.	*University of Md.*
Sarah M. Peyton, M.D.	Crisfield, Md.	*Johns Hopkins Univ.*
Lee A. Rademaker, M.D.	Salisbury, Md.	*University of Pa.*
Norman E. Sartorius, Jr., M.D.	Pocomoke, Md.	*University of Md.*
Richard H. Saunders, M.D.	Nanticoke, Md.	*Jefferson Med. School*
G. Herbert Sembly, M.D.	Salisbury, Md.	*Howard University*
Stedman W. Smith, M.D.	Salisbury, Md.	*McGill Univ.*
Robert R. Starr, M.D.	Salisbury, Md.	*Jefferson Med. School*
Nathanael R. Thomas, M.D.	Ocean City, Md.	*Jefferson Med. School*

SUMMARY OF STUDENTS

September 16, 1948 to June 4, 1949

Medical Students	*Male*	*Female*	*Total*
Senior Class	59	9	68
Junior Class	71	11	82
Sophomore Class	85	4	89
Freshman Class	93	5	98
Medical Students	308	29	337
Intramural Post-Graduate Students	23	0	23
Extramural Post-Graduate Students	97	4	101
Students in Art as Applied to Medicine	1	0	1
	429	33	462

GEOGRAPHICAL DISTRIBUTION OF MEDICAL STUDENTS

September 16, 1948 to June 4, 1949

Alabama	1
California	11
Colorado	1
Connecticut	4
Delaware	3
District of Columbia	5
Florida	8
Georgia	6
Idaho	1
Illinois	4
Indiana	3
Kansas	2
Maine	2
Maryland	171
Massachusetts	4
Michigan	1
Minnesota	1
Missouri	1
Nebraska	1
Nevada	1
New Hampshire	2
New Jersey	11
New York	8
North Carolina	12
North Dakota	1
Ohio	11
Oregon	1
Pennsylvania	22
Rhode Island	1
Texas	1
Utah	4
Virginia	4
Washington	2
West Virginia	15
Wisconsin	2
United States Possessions	
Puerto Rico	9

MEDICAL ALUMNI ASSOCIATION

OFFICERS 1949–1950

(Term beginning July 1, 1949 and ending June 30, 1950)

President

William H. Triplett, M.D.

Vice Presidents

Page Jett, M.D.
John H. Hornbaker, M.D.
John Mace, M.D.

Secretary

Thurston R. Adams, M.D.

Assistant Secretary

Simon Brager, M.D.

Treasurer

Charles Reid Edwards, M.D.

Executive Secretary

Mrs. Minette E. Scott

Board of Directors

Albert E. Goldstein, M.D., *Chairman*
William H. Triplett, M.D.
Charles Reid Edwards, M.D.
Thurston R. Adams, M.D.
Simon Brager, M.D.
Louis A. M. Krause, M.D.
Emil Novak, M.D.
Austin Wood, M.D.
Wetherbee Fort, M.D.

Library Committee

Milton S. Sacks, M.D.

Editors

John A. Wagner, M.D.
C. Gardner Warner, M.D.

Representatives to General Alumni Association

Thurston R. Adams, M.D.
John A. Wagner, M.D.
William H. Triplett, M.D.

Nominating Committee

W. Raymond McKenzie, M.D., *Chairman*
Frank Ogden, M.D.
Robert F. Healy, M.D.
Ernest I. Cornbrooks, M.D.
Frank K. Morris, M.D.

Alumni Council

Louis H. Douglass, M.D.
Lewis P. Gundry, M.D.

Hospital Council

Alfred T. Gundry, M.D.
George F. Sargent, M.D.

ENDOWMENT FUND

The following constitute the Board of Trustees of this Fund:

Arthur M. Shipley, *Chairman*
Robertson Griswold
Harry Clifton Byrd
Albert Burns

H. Boyd Wylie, *Secy.-Treas.*
Charles Reid Edwards
Horace E. Flack
W. Conwell Smith

William P. Cole Jr.

This Board is incorporated by act of the Legislature of the State, its legal title being "The Trustees of the Endowment Fund of the University of Maryland," and is independent and self-perpetuating. Its powers are limited *to the expendi-*

ture of the interest derived from the various funds, which is applied as directed by donors for the benefit of the University. Contributions, donations and bequests are solicited from Alumni and friends. They may be made to the general or University Fund, to the Medical Fund or to any other department of the University. If intended for the School of Medicine, they may be given to the general medical fund or to some special object, as building, research, library, pathology, hospital, publication, laboratories, gymnasium, scholarship, medal, prize, etc., in which case the wishes of the donor will be strictly regarded. Checks should be made payable to The Trustees of the Endowment Fund of the University of Maryland, H. Boyd Wylie, Treasurer, Lombard and Greene Streets, Baltimore-1, Maryland.

FORMS OF DEVISE OR BEQUEST

To Endowment Fund

I give, devise and bequeath to the Trustees of the Endowment Fund of the University of Maryland, a corporation incorporated under the laws of the State of Maryland, for the benefit of the Faculty of Medicine..

(Here state amount or describe property)

To School of Medicine

I give, devise and bequeath to the Regents of the University of Maryland, a corporation incorporated under the laws of the State of Maryland, for the benefit of the Faculty of Medicine..

(Here state amount or describe property)

THE UNIVERSITY OF MARYLAND SCHOOL OF NURSING

The University of Maryland School for Nurses was established in the year 1889. Since that time it has been an integral part of the University of Maryland, coming under the same government. It is a non-sectarian school, the only religious services being morning prayers.

The University Hospital is a general hospital containing about 435 beds. It is equipped to give young women a thorough course of instruction and practice in all phases of nursing.

Programs offered: The programs of study of the school are planned for two groups of students: (a) the five-year group, (b) the 36-month group.

The requirements for admission to the five-year program of the School of Nursing are the same as for other colleges of the University. The completion of this course entitles the student to the degree of Bachelor of Science from the University of Maryland and to the diploma of the University Hospital School of Nursing.

The requirements for admission to the 36-month program are the satisfactory completion of an academic course in an approved high school. The completion of this course entitles the student to the diploma of the University of Maryland School of Nursing.

Applications and catalogues may be obtained from the Director of the School of Nursing, University Hospital, Baltimore 1, Md.

MERCY HOSPITAL SCHOOL OF NURSING

The Mercy Hospital School of Nursing was established in 1899 and incorporated on December 23, 1901. It is an integral part of the Mercy Hospital and is under the same government. Mercy Hospital affords exceptional advantages for the education of nurses. It is a general hospital containing 348 beds, and offers opportunities for a thorough and varied experience. By its institutional affiliation with the University of Maryland it secures professors who give to the student the results of their training and experience in the fields of the medical and affiliated sciences.

The University of Maryland, and Mount Saint Agnes College, in affiliation with the Mercy Hospital School of Nursing, offer a five year combined Academic and Nursing program. The completion of this course entitles the student to the degree of Bachelor of Science from the University of Maryland and Mount Saint Agnes College, and to the diploma of the Mercy Hospital School of Nursing. Graduate nurses who hold college degrees are greatly in demand, especially for positions in administration and teaching institutions. This program consequently offers a distinct advantage.

INDEX TO PERSONAL NAMES

Abraham, Robert A., 24, 93, 95, 96
Abrams, Robert P., 26, 40
Abramovitz, Leonard, 38
Acton, Conrad B., 13, 25, 62, 63
Adams, Charles Baird, Jr., 100
Adams, Thurston R., 12, 21, 26, 38, 73, 74, 77, 80, 106
Adelstein, Benjamin Alfred, 100
Adkins, Charles Glen, 100
Agee, Fred B., Jr., 25
Ahlquist, Richard Elmer, Jr., 100
Aisenberg, Myron S., 9, 22, 79
Alderman, George Carl, Jr., 100
Allen, James Leon, 100
Allison, James H., 103
Alvarez, José A., 22, 78
Alvarez, Joseph, 103
Amberson, William R., 8, 9, 60
Andersch, Marie A., 13, 64, 67
Andersen, William Andrew, 97
Anderson, A. Russell, 15, 68
Anderson, Franklin V., 8, 11, 21, 40, 76, 77
Anderson, George W., 39
Andrews, James William, 100
Ansberry, Merle, 11, 26, 81
Apffel, Phillip R., 19
Applegarth, Eva, 36
Armstrong, Thomas Henry, 100
Arnold, James G., Jr., 8, 11, 21, 30, 38, 78
Arrants, Robert C., 22
Arthur, Robert Key, Jr., 99
Ash, Howard W., 103
Ashman, Leon, 15, 35, 64, 65
Atkins, Raymond Melvin, 100
Auld, David, 23

Bachman, Leonard, 24, 93, 95, 96
Bacon, A. Maynard, Jr., 17, 70
Bacon, John Lewis, 97
Baer, R. W., 103
Baetjer, Walter A., 8, 11, 63
Baggett, Joseph W., 22
Baggott, Bartus T., 31
Bagley, Charles, 97
Bagley, Charles, Jr., 8, 9, 21, 30, 38, 40, 78
Bailey, Claude F., 34
Bakal, Daniel, 100
Baker, Timothy Danforth, 100
Baldwin, Ruth B., 19, 25
Ballard, Margaret B., 13, 27, 81
Ballin, Ralph W., 103
Banfield, Ernest E., 17, 102
Bare, S. Luther, 103
Barnard, John William, 93, 95, 96
Barnes, Thomas G., 22
Barnett, Donald J., 12, 15, 22, 62, 84
Barthel, John Paul, 99
Bauer, Robert E., 22
Baumann, Wilbur Nelson, 97
Beacham, Edmund G., 15, 39, 64
Bean, P. J., 104
Beardsley, Earl Miller, 99
Beardsley, Jane F., 20, 61
Beck, Harry McB., 15, 32, 33, 36, 83
Beck, Harvey G., 8, 31
Behr, Eleanor, 33
Belkin, Joseph William, 93, 95, 96
Bell, Arthur Keith, 99
Bell, Frederick K., 19, 61
Benjamin, William Philip, 93, 95, 96
Bennett, Sara Elizabeth, 93, 95, 96
Benson, John F., 20
Bereston, Eugene S., 13, 26, 31, 35, 72
Berggreen, Raymond G., 23
Bergofsky, Edward Arnold, 100
Bernadette, Mother M., 29
Berrios, Osvaldo, 100
Berry, Rita, 33
Berry, Robert Z., 15, 76
Biddix, Joseph C., 9, 22, 80
Biehl, Harold P., 19, 79
Bilder, Joseph, Jr., 99
Billingslea, C., 103
Bimestefer, Lawrence W., 39
Bird, Joseph G., 17, 19, 61
Bircly, Beverly Robert, 99
Birely, M. Franklin, 103
Bisanar, James M., 23
Bisgyer, Jay Lewis, 97
Bix, Hans, 39
Blades, Nancy, 99
Blake, Charles F., 75
Bleakley, Jane L., 17, 85
Bleecker, Harry Harlan, Jr., 97
Blum, Louis V., 25
Blundel, Albert Edward, 93, 95, 96
Bodine, Charles D., 102
Bogorad, Daniel E., 25
Bongardt, Henry F., 12, 29, 30, 72
Borden, Melvin N., 25
Bordley, John E., 38
Borges, Francis Joseph, 97
Borssuck, Samuel, 104
Bossard, John Wesley, 99
Bowers, John Z., 15, 64
Bowie, Harry C., 15, 38, 59, 73, 74
Bowyer, Thomas S., 15, 82
Boyd, C. Holmes, 37
Boyd, Kenneth B., 13, 27, 81, 82
Bradford, Edward, 93, 95, 96
Bradford, George W., 19
Bradley, J. Edmund, 8, 9, 20, 21, 40, 69
Bradley, W. P., Jr., 103
Bradshaw, Raymond, Jr., 97
Brady, Frank J., 23
Brady, Leo, 12, 22, 82
Brager, Simon H., 12, 30, 31, 34, 36, 73, 74, 75, 77, 106
Brainin, William, 104
Brambel, Charles E., 33, 64

Brannon, John Vandale, 99
Brantigan, Otto C., 8, 9, 21, 37, 59, 60, 72,74,85
Brice, A. Talbot, 103
Bridges, Jack Arthur, 100
Briele, H. A., 104
Briscoe, Ruth Lee, 8
Broaddus, Edward J , 24
Brockman, Hiram L., 102
Bronushas, Joseph B. B., 97
Brooks, James Burch, 100
Brooks, Ross C., 17, 26, 76
Brouillet, George H., 15, 73, 74
Brown, Ann Virginia, 15. 61
Brown, Frances C., 17, 60
Brown, Thomas R., 40
Brown, William Morris, Jr., 100
Brumback, Frank E., 28, 83
Brumback, J. E., Jr., 15, 28
Brunst, V. V., 14, 59
Bryant, Samuel H., 15, 22, 27, 80
Bryson, William J., 15, 62
Bubert, Howard M., 8, 11, 63, 85
Buchness, A. V., 17, 73
Buchness, George Franklin, 100
Buell, John Russell, Jr., 99
Burgison, Raymond M., 19, 62
Burkey, Fred Jamison, 97
Burleson, Norris M., 102
Burns, Albert, 106
Burns, Harold H., 14, 30, 34, 73
Burns, Herbert, 103
Burns, J. Howard, 32
Butler, Lillian, 33
Byerly, M. Paul, 33, 24, 64
Byrd, Harry Clifton, 7, 106

Caldwell, Lucile, 15, 26, 72
Caplan, Lester, 25
Cappuccio, Joseph P., 15, 27, 80
Carey, T. Nelson, 8, 9, 20, 24, 31, 63
Carmel, Sister M., 29
Carr, C. Jelleff, 8, 11, 61
Carroll, Elizabeth, 85
Carroll, John Edward, Jr., 100
Cato, Robert E., 23
Cerasano, Ernest A., 102
Chambers, Earl L., 32
Chambers, John W., 17, 30, 73, 78
Chambers, Robert G., 19, 79
Chambers, Thomas R., 8, 11, 30, 72
Chance, L. T., 17, 73
Chapman, Constance, 33
Chapman, Ross McC., 9
Chelton, Louis Guy, 98
Chichester, Peter W., 7
Christensen, Osborne, 14, 81
Christensen, Thomas A., 15, 69, 104
Christopher, Russell Lee, 19, 59, 99
Clapp, Clyde A., 8
Clarke, Carl Dame, 8, 11, 85
Clayman, David Stanford, 104
Clemmens, Raymond Leopold, 99
Cline, James Alexander, III, 34, 93, 95, 96
Cloninger, Rowell C., 23
Clough, Paul W., 8, 11, 63
Clyman, Daniel, 100
Coberth, M. E., 40
Coblentz, Richard G., 8, 9, 21, 30, 38, 78
Coffman, Kaohlin Miner, 99
Cohen, Cecelia E., 56
Cohen, Israel, 56
Cohen, Jonas, 17, 24, 64
Cohen, Morris M., 17, 26, 72
Cohen, Phin, 101
Cohen, Solomon, 99
Cohn, Jerome, 17
Cole, Norman J., 102
Cole, William P., Jr., 7, 106
Colfer, Richard J., 15, 62
Collenberg, H. T., 33
Coller, Jerome Joel, 98
Compton, Beverley C., 8, 12, 22, 24, 26, 27, 38, 78, 82
Conley, Charles H., Jr. 103
Connor, Thomas P., 34
Cook, Sarah, 17, 19, 70, 85
Cooper, Donald D., 17, 35, 70
Cordi, Joseph M., 15, 35, 69
Cornbrooks, Ernest I., Jr., 12, 22, 27, 38, 79, 82, 106
Cornelia, Sister M., 29
Corpenning, Tom Nye, 98
Correll, Shirley W., 25
Cotter, Edward F., 12, 21, 24, 63, 70
Cotton, Albertus, 8, 31, 33, 39
Coughlan, Stuart G., 15, 73
Councill, W. A. H., 14
Covey, William C., 23
Covington, E. Eugene, 27, 33, 79
Cowen, Joseph Robert, 98
Cracraft, William Atkinson, 98
Crosby, Robert M. N., 19, 78
Cross, Richard J., 15, 26, 28, 76, 77, 83
Crouch, J. Frank, 8
Culler, John M., 103
Culpepper, Stuart Pitner, 101
Culver, Samuel H., 17, 73
Cunningham, Raymond M., 15, 26, 28, 73, 77
Curanzy, Raymond Ralph, 99
Curtis, Raymond M., 38
Cushing, J. G. N., 12, 68

Daly, Harold Lawrence, Jr., 98
Daly, Miriam Abbott Shamer, 98
Dann, Alfred H., 26
Davidson, Charles N., 8, 11, 22, 40, 84
Davies, Ross, 11, 71
Davis, Carl L., 8, 9
Davis, E. Hollister, 17
Davis, George H., 17, 27, 81
Davis, John R., Jr., 15, 32, 35, 64
Deane, Garrett E., 23
Deckelbaum, Joseph, 99
Deckert, W. Allen, 15, 26, 73, 74, 82
DeHoff, John B., 17, 24, 64, 66
Deitz, Aaron, 104
Deitz, Leonard Loeb, 98
Delea, Catherine Sophia, 101

Demarco, S., Jr., 30
Demarest, Elinor Weed, 98
Demarest, Lawrence Mann, 98
Demmy, Nicholas, 98
Dennis, John M., 19, 23, 84
Deringer, Florence Hurtt, 93, 95, 96
Dettbarn, Ernest Albert, 99
DeVincentis, Michael L., 17, 30, 34, 73
Devlin, Andrew Joseph, 101
Dice, Kathryn, 14, 68
Dickey, Francis G., 14, 20, 24, 63, 68
Diehl, William K., 12, 22, 27, 38, 79, 82
Diggs, Everett S., 12, 22, 27, 38, 79, 82
DiGiovanni, Anthony John, 101
Dillinger, Karl A., 34
Dixon, D. McClelland, 14, 62, 81
Dobbs, Edward C., 9, 22, 27, 80
Dodd, William A., 15, 32, 33, 36, 83
Doeller, Charles H., Jr., 15, 27, 32, 33, 36, 81, 83
Donner, Leon, 99
Dorman, J. William, 39
Dorsey, Brice M., 9, 21, 27, 79
Douglas, Robert Arnold, 101
Douglass, Louis H., 8, 9, 20, 22, 37, 81, 106
Douglass, Robert Corl, Jr., 101
Dudley, Winston Clark, 79
Duffy, William C., 15, 32, 33, 36, 83
Dumler, John C., 12, 22, 27, 38, 78, 82
Duncan, Leroy, E., Jr., 39
Dunetz, Lora E., 28
Dunford, William Stanley, Jr., 101
Dunn, George Mitchell, Jr., 99
Dunnigan, William C., 17, 30, 34, 73

Eakle, Burke Eldridge, 101
Easterday, Carroll, 103
Eastland, J. Sheldon, 11, 31, 35, 63
Eaton, Jay W., 58
Eaton, Martha C., 16
Eckert, Herbert Lewis, 101
Edlow, Ernest S., 16, 32, 33, 36, 82
Edmunds, Frederick Thomas, 98
Edmunds, Page, 8
Edwards, Charles Reid, 8, 9, 10, 20, 21, 40, 72, 74, 75, 106
Edwards, David Everett, 99
Edwards, Monte, 8, 10, 21, 26, 38, 72, 77
Edwards, William Hunter, Jr., 99
Egbert, Lawrence Deems, Jr., 101
Ehrensberger, Ray, 10, 26, 81
Elgin, Lee William, Jr., 101
Elgin, William W., 12, 68
Ellington, H. V., 103
Elliott, Charles Stanley, 101
Ellis, Francis A., 12, 21, 26, 31, 35, 71, 72
Emrich, William, 104
Erwin, J. J., 14, 32, 36, 82
Esmond, William George, 99
Etienne, Wolcott L., 104
Eubanks, Otha Albert, Jr., 93, 95, 96
Evans, John E., Jr.,
Evans, Otis Druell, Jr., 99
Fahrney, H. Laurence, 103
Fargo, Leon K., 14, 31, 35, 76
Fassel, Mary S., 19, 62
Fearing, William L., 14, 21, 25, 70
Feldman, Maurice, 12, 32, 35, 68
Ferguson, Charles Kirkpatrick, 99
Ferguson, Frederick P., 8, 12, 60
Ferris, John A., 34
Feski, Joseph Paul, 101
Fifer, Jesse S., 103
Figge, Frank H. J., 8, 10, 59, 60
Fine, Jack, 101
Fine, Morris A., 18, 24, 26, 64, 76
Fineman, Jerome, 12, 32, 35, 69
Finesinger, Jacob E., 8, 9, 10, 21, 68
Finkelstein, A. H., 8, 11, 20, 21, 24, 25, 69
Fisher, Charles T., 104
Fisher, Donald E., 16, 62
Fisher, William H., 102
Fitzgerald, Joseph Carroll, 99
Fitzpatrick, Mary, 28
Fitzpatrick, Vincent dePaul, 34
Flack, Horace E., 106
Fleck, H. K., 10
Fleisher, Ronald, 104
Flynn, Philip D., 16, 32, 35, 64
Foley, Michael Joseph, 101
Forman, Robert Blaine, 93, 95, 96
Fort, Wetherbee, 12, 31, 63, 85, 106
Foutz, Charles R., 103
Fox, J. Leland, 104
Fox, Samuel L., 14, 26, 76, 77
Frank, Bertha Rayner, 55
Frank, Samuel Leon, 55
Fravel, Charles R., 34, 93, 94, 95, 96
Freedom, Leon, 8, 11, 21, 24, 62, 70
Freeman, Irving, 14, 24, 63, 65
Frey, Edward L., Jr., 32
Frey, Edward L., Sr., 35
Friedenwald, Edgar B., 8, 10, 32, 35, 69
Friedenwald, Harry, 8, 30
Friedenwald, Jonas, 15, 83
Friedman, Paul N., 16, 28, 83
Fritz, Louis Albert, 101
Fuccy, Mary Russell, 101
Fullilove, Jack, 99
Funk, Audrey M., 18, 64, 67
Fusco, J. D., 31, 36
Fusting, William H., 18, 64, 66

Gaither, A. Bradley, 54
Gallaher, James Patrick, 99
Galvin, Gerald A., 16, 33, 36, 82
Galvin, Thomas K., 8, 10, 29, 32, 36, 82
Ganey, Joseph B., 23
Garcia-Palmieri, Mario Ruben, 99
Gardner, Maud M., 40
Gareis, L. Calvin, 16, 18, 27, 39, 62, 81
Garlick, William L., 14, 30, 34, 73, 75
Gaskel, Jason H., 16, 31, 35, 75
Gates, John Butler, 99
Gaver, Grason W., 10, 22, 80
Gebhardt, Robert William, 101

Gehrmann, Frederica, 56
Gellman, Moses, 8, 11, 21, 26, 39, 75
George, J. E., 102
Gephardt, Ruth L., 33
Geraghty, Frank J., 12, 24, 63
Geraghty, William R., 18, 73
Gichner, Joseph E., 8
Gigliotti, Russell, 16, 22, 27, 80
Gilbert, Richard A., 23
Gill, Joseph Edward, 93, 95, 96
Gillis, Andrew C., 8, 10
Gillis, Francis W., 12, 31, 35, 76
Gilmore, David J., 104
Ginsberg, Leon, 40
Gislason, Paul Harold, 101
Glick, Samuel S., 12, 25, 69
Go-Kiatsu, Frederick, 19
Gold, Benjamin M., 23
Goldsmith, Harry, 12, 32
Goldsmith, Selma R., 25
Goldstein, Albert E., 12, 62, 106
Golley, K. W., 32
Gonzalez, Luis Felipe, 101
Goodman, Howard, 25
Goodman, Julius, 30
Goodman, Louis E., 27, 73
Goodman, Louis F., 18, 79
Googins, Charles George, 98
Gordon, Benjamin Dichter, 99
Gore, Jay Calvin, 101
Gore, Robert J., 104
Gorten, Martin Klaus, 93, 95, 96
Gould, Virginia Marie, 98
Govatos, George, 12, 73
Grabill, J. Stanley, 103
Grabill, James Rodney, 101
Gramse, Fred R., 104
Granoff, H. L., 16, 33, 83
Grassgreen, Irvin M., 104
Gray, David B., 23
Gray, Harry Williams, 93, 95, 96
Gray, James K., 103
Gray, William D., 104
Graybeal, Clarence Edward, 101
Greco, William Richard 101
Green, T. W., 103
Greene, John P., 102
Greenstein, George Herbert, 98
Griffith, W. Allen, 104
Grill, Richard D., 18, 85
Griswold, Robertson, 106
Gross, Joseph B., 18
Grubb, Robert Alvin, 101
Guido, Angelina, 93, 95, 96
Guilbeau, Joseph A., Jr., 19, 67
Gundry, Alfred T., 106
Gundry, Lewis P., 11, 24, 28, 63, 106
Gutman, Isaac, 35
Guy, Ernest, 64

Haase, F. Robert, 23
Hachtel, Frank W., 8, 9, 10, 60
Hagan, Robert C., 23
Hageage, George J., 104
Hahn, Robert R., 23
Haines, John S., 16, 31, 35, 76
Hall, Howard E., 20
Hamberry, Leonard Gerard, 98
Hankin, Samuel J., 16, 24, 64, 65
Hankins, John R., 23
Hankoff, Leon Dudley, 101
Hannan, Alice R., 36
Hannan, Leon, 36
Hanrahan, Edward M., Jr., 38
Harmon, John B., 19, 62
Harne, O. G., 7, 8, 9, 11, 59, 60
Harne, William G., 61
Harp, J. Elmer, 103
Harris, James Radcliffe, 93, 95, 96
Harrison, Harold E., 37
Hartz, Alvin J., 16, 39, 64, 66
Hatem, Frederick Joseph, 99
Hawkins, Charles W., 18, 23, 76
Hawkins, George Kenneth, 98
Hawkins, John F., Jr., 102
Hayleck, Mary L., 16, 69
Healy, John Clauson, 98
Healy, Robert F., 16, 73, 74, 106
Hearn, Carrie I., 104
Hebb, Donald B., 16, 26, 38, 77
Heimer, William Lenox, 101
Heldrich, Frederick J., Jr., 23
Helfrich, Raymond F., 14, 30, 73, 74
Helfrich, William G., 16, 64, 66
Hellen, L. Ann, 18, 64, 67
Henderson, Charles Thomas, 24, 93, 95, 96
Henson, Stanley Willard, Jr., 98
Herbst, Edward J., 8, 13, 61
Hernandez-Paralitici, Pedro H., 24
Herpsberger, W. Grafton, 14, 63, 65
Hetrick, Augustus C., 57
Hetrick, Bruce H., 57
Hetrick, Horace Bruce, 57
Heuman, Philip Walter, 98
Hibbitts, John T., 14, 27, 38, 82
Hicks, Hugh T., 11, 22, 80
Highstein, Benjamin, 16, 26, 72
Hightower, John A., 23
Himmelfarb, Sylvia, 18, 60
Hirschfeld, John H., 18, 22, 38, 39, 76
Hitchcock, Charles M., 55
Hodes, Horace, 11, 71
Hoffman, Reuben, 103
Hofsteter, Grace, 98
Hogan, John F., 13, 26, 76
Hoge, Arthur F., Jr., 24
Holbrook, William A., Jr., 18
Hollander, Mark B., 16, 26, 72
Holljes, Henry W. D., 14, 28, 64
Holloway, William J., 23
Holmes, Charles Martin, 101
Holt, Mark E., Jr., 23
Holter, Edward F., 7
Hooper, Z. Vance, 14, 24, 68
Hoover, Richard D., 23
Hopkins, John V., 18

Hopkins, Robert Charles, 99
Hopkins, Thomas Chattle, Jr., 101
Horine, Cyrus F., 8, 11, 72
Hornbaker, John H., 106
Houck, Romulus Vance, Jr., 101
Howard, Ann, 23
Howell, Clewell, 14, 69
Hoyt, Irvin Gorman, 98
Hubbard, Dorothy D., 19, 61
Hubbard, Edwin M., 24
Hudgins, William Baird, 101
Hudson, Rollin C., 18, 25, 64
Huffer, Sarah Virginia, 98
Hughes, Lloyd W., 104
Hull, Harry C., 10, 20, 21, 72, 74, 75
Humphreys, Charles Wesley, Jr., 93, 94, 96
Hundley, J. Mason, Jr., 8, 9, 10, 20, 22, 26, 27, 38, 78, 82
Hunter, Dewitt T., 19, 59
Hunter, DeWitt Talmadge, Jr., 101
Hurdle, Seth H., 104
Husted, Harriet Lamont, 98
Hutchins, Elliott H., 8, 10, 29, 30, 72, 75
Hyatt, Irvin, 101
Hyle, John Charles, 98
Hyman, Calvin, 16, 73

Ibsen, Maxwell, 98
Iliff, Charles E., Jr., 38
Imburg, Jerome, 23
Inman, Conrad L., 16, 22, 31, 36, 80
Insley, Phillip A., 104
Isaacs, Benjamin H., 14, 31, 36, 76
Iten, George Joseph, 98
Iwamota, Harry K., 13, 61

Jacobson, Meyer D., 25
Jacobson, Meyer W., 14, 63
Jaffe, Albert, 11, 20, 69
Jennings, F. L., 8, 10, 30, 72
Jensen, Roy David, 98
Jeppi, Joseph V., 30, 31, 36
Jerardi, Joseph V., 14, 30, 34, 73, 75
Jett, Page, C., 104, 106
Jewett, Hugh, 14, 38, 76
Jimal, Louis M., 104
Johnson, A. Wesley, 26, 40
Johnson, Edward S., 8, 11, 72
Johnson, Elizabeth, 33
Johnson, Frederick Miller, 99
Johnson, Robert W., III, 18, 81
Johnson, Wallace Edward, 99
Joseph, Sister M., 29
Josephs, David, Jr., 34
Joslin, Blackburn S., 23
Joslin, C. Loring, 8, 10, 21, 69
Judd, Allyn F., 34
Judd, Charles W., 39

Kagan, Harold N., 102
Kallins, Edward S., 16, 25, 64
Kaltreider, D. Frank, 13, 39, 81
Kammer, William H., 35
Kammer, William H., Jr., 16, 32, 64
Kane, Harry F., 16, 32, 33, 36, 83
Kardash, Theodore, 16, 27, 62, 81, 83
Karfgin, Arthur, 14, 35, 64
Karfgin, Walter 24, 64
Karlinsky, Ray Mintz, 56
Karns, Clyde F., 16, 18, 73, 74
Karns, James R., 24, 64
Kaschel, Paul Edward, 99
Kasik, Frank Thomas, 98
Kauffman, Julius, 104
Kayser, Fayne A., 13, 31, 36, 76
Kelley, Gordon William, 98
Keller, Franklin Lloyd, 101
Kellog, W. K., 57
Kemick, Irvin Bernard, 25
Kemler, Joseph I., 11, 30, 83
Kennedy, Margaret, 40
Kerr, James P., 103
Kiel, August, Jr., 34
Kilby, Walter L., 8, 10, 20, 22, 84
Kindt, Willard Freed, 99
King, Victor Francies, 99
Kipnis, David Morris, 99
Kirk, Florence R., 42
Kirkpatrick, Crawford N., 39
Kitlowski, Edward A., 8, 10, 26, 30, 38, 40, 81
Kline, Frank Menefee, 101
Kline, Raymond F., 19, 60
Knabe, George William, Jr., 93, 95, 96
Knapp, Hubert C., 31
Knell, Joseph Anthony, Jr., 101
Knight, Virgil Ellis, 98
Knipp, Harry Lester, 99
Knotts, E. Paul, 7
Knowles, F. Edwin, Jr., 13, 20, 22, 28, 30, 83
Kohn, Schuyler, 18, 27, 81
Koontz, Amos, 38
Koontz, Emery R., 102
Krager, John Martin, 101
Krahl, Vernon E., 8, 11, 59
Kramer, Howard Calvin, 99
Kramer, Irving, 101
Krantz, John C., Jr., 8, 10, 61, 85
Krause, Louis A. M., 8, 10, 20, 31, 39, 63, 85, 106
Kremen, A., 16, 83
Krieger, Morton Morris, 101
Kroll, Louis, J., 16, 64, 65
Kuehn, Frank Gustav, 98
Kuhlman, H. S., 104
Kurashige, Wilfred Hitoshi, 103
Kyper, Frederick T., 11, 22, 38, 76, 77

LaForge, Elizabeth, 14, 68
Lamb, William Eugene, 99
Lambert, H. James, 23
Lane, Elizabeth, 40
Lane, Julian S., 102
Langeluttig, H. Vernon, 13, 37, 63
Lanning, Theodore Reuney, 99
LaPira, Joseph F., 34
Lapp, Herbert Walter, 101

Lavenstein, Arnold F., 16, 25, 69
Lavine, Oscar, 104
Lawry, Lee L., 105
Leach, C. Edward, 14, 25, 63
Lederman, Alfred S., 18, 68
Legg, Thomas H., 103
Legge, Kenneth D., 8, 10, 31, 35, 76
Legum, Samuel, 14, 63, 65
Leibman, Jack, 99
Leitz, R. Frederick, 32
Lerner, Philip L., 13, 32, 35, 70
Leslie, Franklin E., 18, 64
Levin, H. Edmund, 61
Levin, Manuel, 25
Levinson, Lorman L., 18, 27, 81
Levy, Kurt, 14, 24, 64, 65
Lewis, Thomas Earl, 93, 95, 96
Lewis, Thomas Franklin, Jr., 98
Ley, Leo Henry, Jr., 99
Lichtenberg, Joseph David, 98
Lieberman, Alfred T., 38
Lightbody, Charles Harry, 101
Ling, Chi Chan, 19, 62
Link, V. Harwood, 18, 26, 72
Lisansky, Ephriam T, 14, 20, 24, 62, 64
Lister, Leonard Melvin, 99
Locher, R. W., 8, 11, 30, 72
Loechel, William E., 19, 59
Lock, Burton Vernon, 34, 92, 95, 96
Lockard, G. Carroll, 10, 63, 80
Loewald, Hans W., 13, 25, 68
Loker, F., Ford, 16, 30, 34, 73
London, Nathaniel Jacob, 93, 95, 96
Long, Edgar F., 7
Long, W. Newton, Jr., 39
Long, William B., 105
Longley, George Henry, 93, 94, 95, 97
Looper, Edward A., 8, 10, 21, 22, 40, 75
Love, Robert George, 99
Love, William S., Jr., 8, 11, 20, 63
Lukens, James Thomas, 93, 95, 97
Lutz, John F., 8, 13, 59, 60
Lynch, John W., 105
Lynn, William D., 23

MacDonald, James Melvin, 99
MacDonald, Roger K., 39
Mace, John, 106
Macgowan, Birkhead, 31
Macht, Stanley H., 8, 13, 37, 84
Mack, Harry Patterson, 23
Maginnis, Helen I., 16, 27, 83
Magladery, J. W., 39
Malcarney, Alberta Rose, 93, 95, 97
Maldeis, Howard J., 11
Mallis, Nicholas, 23
Maloney, John Thomas, 104
Manchester, Benjamin, 39
Manganiello, Louis O. J., 23, 78
Mann, Hunter R., 105
Mansberger, Arlie R., Jr., 19, 73
Mansdorfer, G. Bowers, 14, 32, 69
Mansfield, W. Kenneth, Jr., 18, 27, 81
Marek, Charles B., 16, 27, 83
Marfy, Marion A., 19, 68
Marrazzi, Amedeo S., 15, 61
Marriott, Henry J., 14, 35, 63
Marsh, James T., 103
Marshall, Joseph H., 16
Martin, Gerald A., 23
Martin, George William, Jr., 98
Maseritz, I. H., 14, 31, 35, 75
Mathews, William Allen, 101
Mattax, Harry McCoy, 93, 94, 95, 97
Matthews, Mary Elizabeth, 34, 93, 95, 97
Maxson, Charles W., 8, 11, 30, 72
May, Homer Woodrow, 34, 93, 95, 97
Mays, Howard B., 13, 20, 21, 24, 26, 38, 62, 76
McCaffrey, Henrietta, 33
McCarthy, Harry B., 40
McCeney, Robert S., 104
McCord, Charles Frederick, 93, 95, 97
McCormick, Charles P., 7
McCrumb, Fred R., Jr., 23
McElvain, Norma F., 20
McElvain, Wilbert Harding, 98
McElwain, Howard B., 18, 30, 73
McFadden, Earl Boyd, 99
McFadden, John William, 99
McFaul, William N., Jr., 30
McGoogan, Malcolm T., 102
McGrady, Charles Winifred, Jr., 100
McHenry, D. J., 16, 28, 83
McIntosh, Edith R., 42
McKay, John Nelson, 101
McKenzie, W. Raymond, 13, 31, 76, 106
McLain, George H., 104
McLaughlin, Francis J., 16, 68
McLean, George, 13, 31, 63, 80
McMillin, Parker J., 37
McNally, Hugh B., 14, 22, 32, 81
McNinch, Eugene R., 23
McNinch, James R., Jr., 23
McShane, James R., 39
McVaugh, Robert S., 103
Mech, Karl F., 14, 25, 59, 62, 74
Medairy, Mary Veronica, 98
Mellott, Margaret E., 16, 61
Mendez-Bryan, Ricardo Tomas, 100
Meranski, Israel P., 16, 32, 35, 69
Merkel, Walter C., 11, 33, 62
Merrill, George G., 39
Messler, John H., 103
Metcalf, John Shelby, 100
Miceli, Carmela E., 33
Michel, Helene D., 104
Middleton, Edmund B., 24, 93, 95, 97
Millan, Lyle J., 14, 21, 26, 76
Miller, Dorothea Anna, 98
Miller, James P., 26
Miller, John H., 39
Miller, Joseph M., 15, 73, 74
Miller, Max Jay, 93, 95, 97
Miller, Robert Eugene, 98
Minnick, Carmela E., 33
Minor, James V., Jr., 23

Mitchell, George W., 31
Mohler, Suzanne, 19, 68
Moore, Hilda E., 42
Moores, J. Duer, 16, 27, 73, 79
Morgan, Zachariah, 8, 13, 68
Morris, Frank K., 14, 32, 36, 106
Morrison, J. Huff, 16, 24, 27, 81
Morrison, Samuel, 11, 20, 63, 68
Morrison, Theodore, 8, 10, 32, 68
Mosser, Robert Schaaf, 100
Moyer, Charles M., 105
Moyer, John Lewis, III, 93, 95, 97
Moyers, W. B., 104
Muller, S. Edwin, 14, 16, 32, 35, 64, 67
Mullins, Laurel Virginia, 101
Murdock, Harry M., 13, 68
Muse, Joseph E., Jr., 16, 24, 64, 65
Musser, Ruth, 16, 61
Muth, Frances, 33
Mutter, Arthur Zelig, 100
Myers, Donald Johnson, 100
Myers, John A., 16, 64

Neal, Hunter Shainlane, 98
Nelson, Alfred T., 8, 13, 20, 22, 38, 84
Nelson, James W., 11, 30, 35, 72, 75
Neumayer, Francis, 93, 95, 97
Newell, H. Whitman, 11, 21, 25, 68
Newell, Josephine Evelyn, 93, 95, 97
Nichols, J. Pomeroy, 19, 78
Nicklas, Gilbert Lee, 93, 95, 97
Niermann, William A., 23
Nock, R. M., 105
Noguera, Julio Tomas, 98
Nolan, James J., 25
Novak, Emil, 8, 11, 81, 106
Novey, M. Alexander, 13
Novey, Samuel, 16, 68
Nuttall, Ernest B., 10, 22, 80
Nuttle, Harry H., 7
Nygren, Edward Joseph, 100

O'Connor, John A., 30
O'Donnell, Charles F., 35
Ogden, Frank N., 106
Oliver, Norman, 103
Olsen, Richard Young 101
O'Malley, Joseph Edward, 98
O'Rourk, Thomas R., 8, 10, 21, 22, 26, 38, 76, 77
Orth, John Stambaugh, 100
Osborne, John C., 18, 32, 35, 64
Otanasek, Frank J., 18, 30, 78
Owings, James C., 38
Ozazewski, John C., 19, 23

Pacienza, F. A., 30, 36
Packard Douglas Richard, 100
Padget, M. Paul, 16, 64
Panzarella, John Henry, 34, 93, 95, 97
Parelhoff, Merrill Elliott, 93, 94, 95, 97
Parham, S. Malone, 23
Patterson, J. Milton, 7
Patterson, W. Stuart, 23
Paula Marie, Sister, 33
Peake, C. W., 8, 11, 72, 74
Pearre, A. A., 103
Pence, John W., 19
Pembroke, Richard H., Jr., 16, 25, 68
Pencheff, Dorris Marie, 100
Perez, Julietta, 33
Perilla, Frank Robert, 100
Perry, Benton Bloch, 101
Perry, Henry David, Jr., 100
Pertz, Elden H., 34
Pessagno, D. J., 8, 10, 30, 72, 75
Peters, H. Raymond, 8, 10, 29, 31, 33, 35, 63
Peyton, Sarah M., 105
Pfeil, Edgar T., Jr., 103
Phelan, Patrick C., Jr., 16, 30, 34, 73
Phelps, Winthrop M., 39
Pierpont, Ross Z., 16, 18, 59, 73, 74
Pillsbury, William Andrew, Jr., 101
Pincoffs, Maurice C., 7, 8, 10, 20, 29, 31, 63
Pincoffs, Susan R., 18, 28
Pittman, Robert Raikes, 93, 95, 97
Pleet, Jerome, 93, 95, 96
Podolnik, Aaron, 19
Polek, Melvin F., 34
Poling, Evangaline, 98
Potter, Vance Edward, 101
Powell, Albert M., Jr., 34
Preinkert, Alma H., 7
Preis, Kyrle W., 10, 80
Proctor, Samuel E., 17, 25, 73
Pruitt, Charles E., 103
Pruitt, Hazel Y., 18, 61

Queen, J. Emmett, 32, 35
Quill, Thomas H., 103

Rabinovitch, Ruth, 19, 68
Rabinowich, Malcolm Lee, 101
Rademaker, Lee A., 105
Ramirez-Santisteban, Gilberto, 101
Ramsey, Wilbur O., 13, 22, 80
Ramsey, William O., 27
Randolph, Kenneth V., 10, 22, 80
Rappeport, Jonas Ralph, 101
Raskin, Howard Frank, 34, 93, 95, 97
Raskin, M., 30, 36
Rasmussen-Taxdal, David Samuel, 100
Rathbun, Howard K., 38
Reed, Julian Ward, 101
Reeder, J. Dawson, 8
Reese, Frederick M., 18, 28, 83
Reese, J. G. M., 8, 11
Reese, J. Morris, 8, 22, 39, 81, 85
Reeser, Guy McLelland, Jr., 100
Reeves, Henry Gray, Jr., 100
Reifschnider, Charles A., 8, 10, 21, 38, 72, 75, 80
Reifschneider, Herbert E., 14, 59, 73, 74
Reilly, Kathleen Margaret, 100
Reimann, Dexter L., 8, 12, 21, 62
Reiter, Robert A., 14, 63, 65
Renner, William F., 18
Revell, Samuel T. R., Jr., 14, 20, 25, 64

Rever, William Benjamin, Jr., 98
Rex, Eugene Braiden, 100
Reynaud, Louis Favrot, Jr., 98
Reynolds, Charles Emory, Jr., 101
Reynolds, Georgia, 100
Rice, Robert Milton, 100
Rich, Benjamin S., 12, 26, 31, 40, 76, 77
Rich, Phoebe, 17, 68
Richards, Esther L. 37
Richardson, Paul Frederick, 98
Riddel, Clifford Thurston, Jr., 34, 93, 95, 97
Ridgely, I. O., 13, 30, 72
Rienhoff, William F., Jr., 13, 30, 75
Rienhoff, William R., Jr., 72
Rigdon, Henry L., 14, 38, 59, 73, 74
Righetti, Milton Raymond, 98
Ringrose, Theresa, 33
Ritchings, E. Peyton, 104
Rizika, Stuart, 27
Roberts, James A., 34
Robertson, M. E., 103
Robinson, Daniel R., 17, 30, 34, 73
Robinson, Harry M., Jr., 13, 21, 26, 64, 72
Robinson, Harry M., Sr., 8, 10, 21, 26, 40, 71, 80
Robinson, Ida Marian, 42
Robinson, Raymond C. V., 14, 26, 35, 39, 72
Rodler, Edith, 104
Roehrig, Charles Burns, 93, 95, 97
Roemmicb, William, 20
Rogers, Harry L., 8, 10, 31, 35, 39, 75
Rogers, Robert A., 102
Rolando, Anne H., 57
Rolando, Henry, 57
Rombro, Marvin Jay, 100
Rosen, Robert Reuben, 93, 95, 97
Rosson, William Daniel, 101
Roth, Albert, 104
Roth, Oliver Ralph, 98
Rothchild, Irving, 13
Rothschild, Stanford Z., 7
Rovelstad, Howard, 42
Rowland, Harry Shepard, Jr., 100
Rowland, J. M. H., 8
Rubin, Seymour Howard, 98
Rubin, Seymour W., 17, 62
Rudy, Norman Edward, 98
Russo, James, 18, 32, 84
Rysanek, William J., Jr., 17, 32, 33, 83

Saavedra-Amador, Armando, 100
Sacks, Milton S., 9, 12, 20, 24, 62, 63, 67, 85, 106
Sanderson, William R., 57
Sandler, Robert, 98
Sarewitz, Albert Bernard, 93, 94 96, 97
Sargent, George, 106
Sartorious, Norman E., Jr., 105
Sasscer, Robert B., 104
Saunders, Richard H., 105
Savage, John E., 13, 20, 22, 27, 39, 81
Scarborough, Clarence P., 17, 30, 34, 38, 81
Schaefer, John F., 17, 30, 34, 73
Scher, Jordan Mayer, 93, 96, 97
Scherlis, Sidney, 14, 25, 64
Schimmel, Bella Faye, 102
Schlesinger, George G., 39
Schmidt, Emil G., 8, 9, 10, 61
Schnaper, Nathan, 93, 94, 96, 97
Schnauffer, William, Jr., 103
Scholastica, Sister M., 34
Schoolman, L. R., 103
Schott, Francis, 40
Schreiber, Richard David, 93, 96, 97
Schultz, Kathryn L., 13, 25, 68
Schwartz, Benson Charles, 23
Schwartz, Theodore A., 13, 31, 36, 76
Schwarz, Virginia, 33
Scott, Minette E., 106
Scott, Roger David 100
Scully, John Thorsen, 100
Seabold, William M., 13, 15, 21, 69
Seegar, J. King, B. E., Jr., 18, 27, 81
Seliger, R. V., 40
Sembly, G., Herbert, 105
Sendelback, Bertha, 40
Serra, Lawrence M., 15, 64
Setterstrom, Sarah Anetta, 98
Settle, William B., 13, 25, 59, 73, 74
Shapiro A. Albert, 15 26, 72
Sharett, John Oliver, 102
Shaw, Grace E., 22
Shawbaker, Anna, 36
Shea, William Howard Holland, 150
Sheehan, Joseph C., 17, 32, 33, 36, 83
Shell, James H., 23
Sheperd, Frederick Parker, 98
Sheppard, Robert C., 17, 25, 73, 74
Sherman, Jerome, 18, 25
Sherrard, Margaret Lee, 34, 93, 96, 97
Sherrill, Elizabeth D., 66
Sherry, Samuel Norman, 100
Shipley, Arthur M., 8, 106
Shipley, E. Roderick, 17, 18, 25, 73
Shocat, Albert J., 17, 24, 68
Shock, Nathan W., 39
Shof, Mahlon James, 102
Siegel, Isadore A., 13, 22, 81
Simmons, Frederic Rudolph, Jr., 98
Sindler, Richard Arnold, 102
Sipple, Edward N., 100
Sires, William Oscar, 98
Siwinski, Arthur G., 15, 27, 34, 38, 73, 79
Skipton, Roy Kennedy, 100
Skitarelic, Benedict, 15, 62
Sklar, Allen Leon, 98
Slusher, H. J., 103
Smelser, Rennert M., 34
Smith, Andrew G., 9, 13, 61
Smith, Dietrich Conrad, 9, 10, 60, 85
Smith, Edward P., 13, 29, 31, 36, 82
Smith, Elizabeth, 18, 68
Smith, Frederick B., 12, 32, 69
Smith, George Herbert, 102
Smith, George W., 23, 78
Smith, J. G. F., 103
Smith, Meredith Parks, 93, 96, 97
Smith, Morton, 98

Smith, R. Dale, 9, 12, 59
Smith, Ruby A., 17, 28, 83
Smith, Sol 13, 31, 35, 63, 67
Smith, Stedman W., 105
Smith, W. Conwell, 106
Smith, William H., 9, 12, 63
Smock, Walter Wilson, 102
Smoot, Aubrey Cannon, Jr., 102
Snider, Kenneth Bruce, 93, 96, 97
Snyder, Samuel, 18, 64
Sobolt, Francis, 26
Solomon, David, 39
Solomon, David Milton, 100
Sosnowski, Andrew Raymond, 98
Spaulding, Raymond Charles, Jr., 98
Spear, Irving J., 8, 21, 40
Speed, William G., III, 39
Speers, Herbert K., 24
Spencer, Hugh R., 9, 10, 21, 33, 40, 62
Spittel, John Allen, Jr., 34, 93, 94, 96, 97
Spragins, Melchijah, 17, 40, 69
Spritz, Norton, 102
Sprunt, Thomas P., 9, 10, 20, 31, 63
Spurling, C. L., 19, 67
Spurrier, O. Walter, 18, 32, 35, 69
Stacy, Theodore, 38
Stahler, Earlin John, 93, 96, 97
Stambler, Alvin Abraham, 102
Stanfield, Elwin Eugene, 93, 96, 97
Stark, William, 19, 68
Starr, Robert R., 105
Startzman, Henry Hollingsworth, Jr., 98
Steckler, Robert Joseph, 93, 96, 97
Steers, Edward, 9, 12, 60
Stegmaier, James G., 34
Stein, Carl Christian, 18, 85
Steiner, Albert, 26
Stevenson, Edward Ward, 93, 96, 97
Stevenson, Thomas McClelland, 102
Stewart, Edwin H., Jr., 17, 27, 73, 79
Stiles, Cleo D., 17, 28, 83
Stone, John Hoskins, 100
Stoner, James E., Jr., 103
Storm, Mary Elizabeth, 98
Stoval, Robert McRae, Jr., 102
Stover, John W., 24
Strahan, John Franklin, 24, 93, 96, 97
Strauss, George A., Jr., 33
Sulka, Casimir Michael, 99
Summerson, William H., 15, 61
Sunday, Stuart D., 18, 64, 66
Supik, William J., 17, 26, 36, 77
Swisher, Kyle L., Jr., 23
Swiss, Adam, 18, 64

Tappan, Benjamin, 40
Taussig, Helen M., 40
Teitelbaum, Harry A., 15, 25, 70
Tenner, David, 17, 64
Theuerkauf, Frank J , Jr., 23
Thibadeau, Robert Torndorff, 99
Thomas, Bernard O., Jr., 103
Thomas, Bernard O., Sr., 103
Thomas, Clyde D., 34
Thomas, Edward P., 103
Thomas James B., 103
Thomas, Nathaniel R., 105
Thomas, Quinten Moore, 102
Thompson, Raymond K., 17, 30, 38, 78
Thompson, William Wesley, 99
Tilley, Russell McFarlane, Jr., 93, 96, 97
Timanus, James Kyner, 93, 96, 97
Tinker, F. X. Paul, 23, 102
Tobias, Richard Boyd, 100
Toms, Bate Carpenter, 99
Toomey, Lewis C., 12, 22, 27, 80
Tongue, R. Kent, 39
Touhey, T. J., 18, 30, 73
Toulson, W. Houston, 9, 10, 21, 26, 38, 75, 77
Townshend, Wilfred H., Jr., 17, 25, 64
Trace, Robert James, 102
Tramer, Arnold, 93, 96, 97
Traugott, Ursula Erika, 102
Trettin, Gene Douglas, 34, 93, 96, 97
Trimble, I. Ridgeway, 12, 30, 34, 38, 72, 75
Triplett, William H., 106
Truitt, Edward B., 19, 62
Truitt, Ralph P., 10, 21, 25
Tuerk, Isadore, 15, 68
Tumminello, S. A., 32
Tunney, Robert B., 17, 32, 33, 36, 83
Turner, Philip C., 7
Twigg, Homer Lee, Jr., 100
Tydings, Millard E., 7

Udel, Melvin, 100
Uhlenhuth, Eduard, 9, 11, 59, 60, 85
Ullrich, Henry F., 9, 12, 20, 21, 26, 31, 35, 38, 39, 75
Ullsperger, John F., 34
Upton, Albert Louis, 99

Vandergrift, William D., 17, 62
Van Goor, Kornelius, 99
Van Lill, Stephen J., III, 19, 24, 25, 64
VanNatta, Paul Clopton, 104
Vanni, Frank L., 102
Varipatis, Michael S., 39
Venable, Sidney J., 20
Venrose, Robert James, 100
Veronica, Sister M., 29
Vicens, Carlos Nathaniel, 102
Vicens, Enrique A., 99
Vincent, Sister, M., 29, 36
Vollmer, Frederick J., 17, 32, 35, 64
Voshell, Allen Fiske, 9, 11, 21, 24, 26, 38, 39, 74, 75, 85
Vyner, Harold, 17

Waghelstein, Julius M., 39
Wagner, John A., 9, 12, 21, 38, 62, 67, 74, 78, 85, 106
Wagner, Philip S., 12, 13, 68
Walker, Robert T., 19
Walker, W. Wallace, 59, 72, 74
Wallace, Scott Pyper, 102
Waller, William K., 15, 24, 64
Walsh, Harry Martin, 102
Walton, Henry J., 8, 40

Walton, Leander Bertram, 102
Ward, Grant E., 9, 12, 22, 27, 38, 72, 78, 80
Warfield, Clarence, 56
Warfield, Genevra, 56
Waring, H. Glenn, 37
Warner, C. Gardner, 9, 12, 37, 62, 106
Warnock, Robert George, 93, 96, 97
Warren, Bryan Pope, Jr., 102
Warren, John, 104
Warthen, William, H. F., 12, 71
Watkins, Dayton O., 104
Watson, Charles Polk, Jr., 100
Watson, Frank Yandle, 93, 96, 97
Weedom, A., 104
Weekley, Robert Dean, 100
Weeks, Earl, 35
Weeks, Howard Nelson, 102
Weeks, Thomas E., 25
Weeks, William Earl, 19, 69
Weems, G. J., 104
Weiland, Glenn S., 12
Weisman, Marcella, 68
Welch, Elbert Sylvester, 93, 96, 97
Welch, Hugh J., 31
Wells, Gibson, J., 13, 25, 69
Wheelright, Harvey Pearse, 100
Whitaker, Charles, 104
White, Byron D., 104
White, Fowler, Felix, 99
White, John P., III, 23
Whitehurst, Mrs. John L., 7
Wich, J. Carlton, 19, 25, 35, 69
Wildberger, Albert John, 102
Wilder, Milton J., 13, 21, 26, 38, 39, 75
Wilfson, Daniel, Jr., 17, 64, 65
Will, David R., 23
Williams, Charles H., 24
Williams, Charles Ray, 100
Williams, Huntington, 9, 11, 71
Wilson, Charlotte, 42
Wilson, Clifford Edward, Jr., 99
Winship, Emma, 24
Winslow, Randolph, 55
Winterringer, James R., 23
Wise, Walter D., 9, 11, 30, 72, 74, 75
Wiseman, Marcella, 19
Wisong, Georgiana, 40
Wodak, Hans, 104
Wolf, Ernest Simon, 99
Wolfe, Carolyn DeWitt, 93, 96, 97
Wolfe, Geraldine F., 19, 59
Wolfe, William D., 55
Wolfel, Donald Anthony, 102
Wolff, Thomas C., 9, 12, 35, 63, 65
Wolfram, Betty, 33
Wolverton, William Roger, 102
Wood, Austin H., 15, 75, 106
Woodward, Arthur F., 104
Woodward, Theodore E., 9, 12, 63
Morgan, Malcolm Sinclair, 102
Worsley, Thomas L., 19, 64, 66
Worthington, Frank D., 104
Wright, Isaac, 13
Wright, Robert B., 9, 12, 62
Wylie, H. Boyd, 7, 8, 9, 106

Yeager, George H., 9, 11, 20, 21, 24, 28, 37, 72, 75, 80
Yeager, William Howard, Jr., 99
York, Shelley Clyde, Jr., 100
Young, Asa D., 13, 33, 84
Young, Calvin Lessey, 100
Young, Latimer G., 23

Zapf, Evelyn Byrd, 40
Zeligman, Israel, 15, 26, 72
Ziegler, John Bosley, 93, 96, 97
Ziegler, Lillian Koch, 93, 96, 97
Zimmerman, Muriel, 40
Zinn, Waitman F., 9, 11, 29, 31, 36, 75
Zupnik, Howard L., 19, 30, 34, 73
Zuravin, Meyer H., 30

The Frank C. Bressler Research Laboratory

University Hospital

BULLETIN

OF THE

SCHOOL *of* MEDICINE

UNIVERSITY OF MARYLAND

1807-1856-1920

VOLUME 34 No. 3

Publishers:
Faculty of Physic
University of Maryland
Baltimore

PUBLISHED FIVE TIMES A YEAR
(JANUARY, APRIL, JULY, SEPTEMBER AND OCTOBER)

Lombard and Greene Streets
Baltimore 1, Md.

Entered as second-class matter June 16, 1916, at the Postoffice at Baltimore, Maryland
under the Act of August 24, 1912.

BULLETIN
OF THE
SCHOOL OF MEDICINE

UNIVERSITY OF MARYLAND

Vol. 34 OCTOBER, 1949 No. 3

MEGACOLON*†

E. RODERICK SHIPLEY, M.D.

BALTIMORE, MARYLAND

Megacolon or giantism of the colon is a relatively uncommon condition that has evoked considerable interest and is the subject of a voluminous literature. Ruysch (22) first described a case in the seventeenth century. Harold Hirschsprung (17) in 1888 presented his classical description of the disease that bears his name. Mya (30) in 1894 described the syndrome, and his name is often applied to it.

Because of the still elusive etiology, a satisfactory classification of megacolon has not yet been evolved. The literature is confusing, and the results of the many forms of therapy proposed are difficult to evaluate because a variety of similar, yet different, clinical aspects are reported under the term megacolon. Most authors consider congenital idiopathic dilatation of the colon or Hirschsprung's disease as synonymous with the term megacolon. This limited definition leads to confusion, since there are probably multiple etiologic factors concerned in the production of a giant colon. It is better to reserve the term megacolon to mean any type of dilated, elongated colon containing quantities of faeces and showing hypertrophy of its muscular coats.

ETIOLOGY

Megacolon is thought to be caused by at least 4 fundamentally different mechanisms (40)

1. Organic Obstruction
2. Functional Obstruction

---

* From the Departments of Surgery and Physiology, Schools of Medicine and Dentistry University of Maryland, Baltimore, Maryland.

† Received for publication July 20, 1949.

3. Neurogenic Dysfunction
4. Extrinsic Metabolic Effects

This classification is preferable to the older one of congenital and acquired megacolon, since more consideration is given to the etiologic factors concerned.

Organic obstruction includes such congenital defects as stenosis of the rectum and rectosigmoidal adhesions, and such acquired defects as simple rectal stenosis, stenosis resulting from lymphopathia venereum and slowly growing carcinoma of the rectosigmoid. The fundamental process is a slowly constricting lesion of the distal bowel which causes more and more obstruction to the passage of stool and thus leads to a work hypertrophy and dilatation of the proximal bowel. On the other hand, a rapid obstruction causes thinning of the bowel wall and a simple dilatation without muscular hypertrophy.

Functional obstruction as a cause of giant colon was proposed many years ago, and many operations were developed for the correction of supposed elongated mesentery of the colon and angulations of the rectosigmoid. Scott (40) and others (5) have recently popularized this idea and state that the filling of an abnormally long loop of bowel with faeces or meconium will cause a kinking of the bowel just proximal to the fixed point; that is the rectosigmoid. This elongated colon, known as dolichocolon, apparently will cause the giantism of the colon, and hypertrophy of its muscular coats.

Neurogenic dysfunction as a cause of megacolon is a favorite topic in recent literature. Many theories have been proposed to explain the enlargement of colon on neurologic grounds, but none of these are completely satisfactory nor does any one theory explain all types of megacolon. The 4 major concepts held today are:

1. Megacolon may be the result of either a neuromuscular segmental defect in the colon or some abnormality of the intrinsic nervous system of the colon leading to a lack of coordination between the proximal and distal portions of the bowel. In the absence of coordination between peristaltic motions and sphincter relaxation an effective obstruction to the passage of faeces is obtained (13, 15, 16).

2. A hyperactivity of the sympathetic division of the autonomic nervous system supplying the distal colon was proposed by Wade and Royle (47), who observed an increase in the power of evacuation in patients on whom they had performed a ramisection for other diseases. This was the beginning of sympathectomy in the treatment of megacolon, and Judd and Adson (24) in 1928 popularized the operation.

3. A hypoactive parasympathetic supply to the distal colon was proposed by Hurst (20) who thought that megacolon resulted from a failure of the anal sphincters to relax when normal colonic peristalsis reached the rectum.

To this he has applied the name *anal achalasia.* In support of this theory are those patients who are improved by rectal dilatation or by parasympathetic stimulatory drugs. Many observers have reported a degeneration or absence of the parasympathetic cells of Auerbach's plexus in the distal colon in cases of megacolon. Absence of intrinsic nerve supply has also been reported in cases of mega-esophagus, pylorospasm and mega-ureter. Whether this degeneration of the ganglion cells is caused by a thiamine chloride lack or other metabolic effects or whether the observed degeneration is secondary to stasis and subsequent inflammation of the intestinal wall is as yet not settled (5, 9, 16, 23, 38, 45, 46).

4. A failure of the sensory pathways to convey the stimuli calling for defecation to the consciousness, may cause some few cases of megacolon, for it is well known that Mongolian idiots (8) or other mentally defective patients (19) develop giant colon, and some patients with cord injuries acquire a typical megacolon.

Extrinsic metabolic effects as a cause of giant colon includes those possible etiologic factors not easily placed in one of the above classes. Etzel (10) reports that a chronic B_1 deficiency may cause degeneration of the cells of Auerbach's plexus and thus lead to mega-esophagus, megacolon, and mega-ureter. He also has found associated with megacolon, an achalasia of the pylorus, a disturbed rhythm of the heart caused by involvement of the A-V bundle and a loss of prepatellar reflexes. These factors should be noted in all cases of proved megacolon in an effort to establish their role in the etiology of giant colon. It is interesting to note the paper of Leithauser (24) in which he reports 6 cases that call attention to the fact that symptoms suggesting the presence of intestinal obstruction and leading to erroneous diagnoses may be caused by thiamine chloride deficiency. Perhaps the B_1 deficiency should be classified under the hypoactive parasympathetic supply to the colon, and without definite proof it is perhaps wiser to classify thiamine deficiency in this last miscellaneous group. Merle Scott (40) reports that hypothyroidism, low blood calcium, and malnutrition may cause some cases of megacolon.

PATHOLOGY

The pathology of megacolon is striking. The involved colon is dilated, elongated and hypertrophied. There is a thickening of the circular muscle layers, but all tunics are involved. The mucous membrane of the colon is hypertrophic and may be studded with many small ulcerations. These ulcers may continue on to perforation, and death may result from peritonitis. The mesentery is long, thick and shows striking lymphadenopathy. Volvulus of the large bowel is frequent. The dilatation is generally seen in the sigmoid, but usually other areas of the large bowel are involved. Of the cases seen at the Mayo Clinic 42.3 per cent had involvement of the rectum, and 11.5 per cent had cecal involvement (49). Any and all parts of the large bowel have been the site of megacolon. Etzel (10) observed the association of mega-ureter, mega-esophagus, and megacolon in 3 out of 16 autopsies on patients with mega-esophagus. Hurst and Jones (21) included mega-ureter in the same etiologic group as mega-esophagus and megacolon.

The incidence is usually about 1 in 9000 autopsies (43), but Lightwood (20) reported a high incidence of 1 in 2620 necropsies in a children's hospital.

Megacolon has been reported in a 7 month fetus (16) and in an 80 year old man (6). The presence of a giant colon of idiopathic etiology in an adult has been called pseudomegacolon by Finney (12). Males are affected 3 to 5 times more often than females (6). Finney (12) also described a familial incidence of giant colon. Other congenital deformities such as cleft palate, hypospadias, etc., are rarely seen in patients with megacolon (5).

TABLE 1

SITE OF INVOLVEMENT IN 26 CASES OF CONGENITAL MEGACOLON

NO. OF CASES	SITE OF INVOLVEMENT					
	Cecum	Ascending Colon	Transverse Colon	Descending Colon	Sigmoid Colon	Rectum
4					+	+
4				+	+	+
4				+	+	
7			+	+	+	
4		+	+	+	+	
3	+	+	+	+	+	+
Totals 26	3	7	14	22	26	11

As Tabulated by Whitehouse, F.; Bargen, J. A.; and Dixon, C. F. (49)

The cause of death is usually some complicating disease, since megacolon itself is usually compatible with life. Bronchopneumonia, myocardial failure and volvulus of the colon with perforation are most often reported as the cause of death.

Some cases diagnosed early in life as megacolon will go on to a spontaneous recovery, and here it is thought that the elongated colon has become straightened out as the child grows.

SYMPTOMS AND SIGNS

The symptoms and signs may or may not be severe. A history of obstinate constipation with alternating short periods of diarrhea is common. The constipation is noticed immediately after birth in the congenital form of megacolon. The stools may be normal or may be dry with a foul odor. Mucous is often passed with the stool and enlargement of the abdomen is common. The patient may be in great distress because of pressure on the diaphragm with compression of the lungs and heart.

Peristalsis is easily visible throughout the abdomen and is associated with a borborygimus. The peristaltic movements are more easily seen than normal because of the thin atrophic abdominal wall.

Tympanites may be found associated with loss of liver dullness to percussion. The patient is usually emaciated, dull, and listless, but this is not always seen. There is a generalized loss of subcutaneous fat especially that of the abdominal wall. Acute pain, nausea and vomiting are rarely seen, and the appetite and digestion are good. A large fecal mass is often felt on rectal examination, and rectal sphincter spasm may be marked. Sigmoidoscopic examination after a cleansing enema is remarkable in the ease with which the scope "falls in the bowel" (6). The mucosa on proctoscopic examination is usually normal, but the bowel is large. Roentgenographic studies should always be confined first to a barium enema if megacolon is suspected, and should be followed by several colonic irrigations. The roentgenogram reveals a loss of haustral markings and a thinning of the walls of the bowel. The size of the colon seen in the roentgenogram is just a sign of the distensibility of the bowel and is not a true picture of the bowel size.

DIAGNOSIS

The diagnosis of megacolon is made by history, physical examination, sigmoidoscopic and roentgenographic findings. The disease must be differentiated from rickets, abdominal cysts, celiac syndrome, and tuberculous peritonitis, which is usually a simple procedure.

TREATMENT

In reviewing the literature, the proper treatment of a specific case of megacolon is found to be confusing. Many procedures, medical and surgical, have been proposed, but the results obtained are difficult to evaluate, since many cases reported have been selected ones, and often no attempt has been made to differentiate the various possible etiologic factors.

In the treatment of any one case of megacolon, a thorough search should be made for the possible etiologic factor or factors, and therapy should be directed towards elimination of the cause of the disease.

A complete check should be made to rule out the large abdomen seen in rickets, celiac syndrome, abdominal cysts, etc. Acute intestinal obstruction should be sought and eliminated at once, if present.

Factors causing organic obstruction leading to megacolon are usually rather easy to determine by the routine diagnostic procedures. If found, the treatment will necessarily be directed toward the elimination of the partially obstructing lesion.

Adequate studies should be made to rule out such extrinsic metabolic effects as hyperthyroidism or hypothyroidism, avitaminosis, malnutrition, etc. If the organic obstruction and extrinsic metabolic effects are not found, the patient may be said to have a functional or neurogenic type of megacolon. Bockus (6) states that, without complications, the treatment here is medical. It is important to realize that megacolon is a progressive disease. At first, the bowel wall is but little damaged but as the disease progresses over a period of months or years the bowel wall becomes more thickened, fibrotic and inflammed. The ganglion cells late in the disease are destroyed. In the early stages the treatment of choice is medical but as the irreversible changes occur the simple medical management will not suffice and radical resections may be necessary. The simple medical management of the patient with giant colon should always be given a trial; and if this fails, various sympathetic nervous system blocks or even resections of the enlarged bowel should be considered.

MEDICAL MANAGEMENT

An attempt to have the patient form good bowel habits is most important. A time when there will be no need for haste and when the patient can always attempt to defecate should be chosen. It is probably wise to attempt to have the bowel movement after breakfast but if this should interfere with getting ready for school or cause rushing, another time of day is acceptable. The morning is preferred, especially if the patient is able to initiate the gastrocolic reflex by eating a large breakfast. The habit training may be supplemented with mineral oil or mild cathartics by mouth and by enemas or colonic irrigations as indicated.

It is usually advised that the diet be low in residue, but it is preferable to prescribe a diet with a considerable residue. In megacolon the bowel wall is dilated and the smooth muscle of the involved segments will not be locally stimulated to contraction unless there is some bulky material within its lumen. It is wise to prescribe a bulk forming substance by mouth. Metamucil is excellent for this purpose since it forms a soft, semi-solid, bulky, nonirritating stool. The use of a low residue diet is not advised in the average case since it does not tend to initiate peristalsis.

Vitamins, especially of the B group and protein should be added to the diet. A diet high in carbohydrates is to be avoided, since in the metabolism of the carbohydrates there is an increased need for the various vitamins of the body and most of the patients with giant colon have a low vitamin supply. Carbohydrates also tend to increase the intestinal bacterial action which may lead to increasing damage to the intestinal wall.

It is interesting to note that at the University Hospital many of the patients with Hirschsprung's disease come from an institution for mental defectives. These patients are offered a diet which is extremely high in carbohydrates and supplemental feedings of vitamin rich foods is not attempted. They are often mentally unable to develop good bowel habits and in the presence of a high carbohydrate, low-vitamin diet, the excellent conditions for the development of megacolon are achieved. It is interesting to speculate as to the possible influence of diet on the development of the disease. At least, in this institution, the high carbohydrate, low vitamin diet fed over a period of years tends to increase the incidence of megacolon; an observation first made by Etzel in South America (9, 10). Abdominal massage, diathermy, and postural exercises will help to keep the normal tonus of the abdominal muscles. Anal sphincter spasm (20) has been proposed as one of the causes of megacolon and from this the use of rectal dilatations has arisen. Any good medical regime should include rectal dilatation at first, even with the use of anesthesia (20). Bockus (6) advises that the patient be taught the use of rectal bougies. The carefully controlled use of certain drugs is of definite value. Most drugs used have their action on the autonomic nervous system, and fall into four main groups.

Those drugs that act on the parasympathetic nervous system to *increase* its tonus are: (a) Acetyl B methyl choline (mecholyl) (2, 26, 27, 33, 44), (b) Prostigmine, (c) Insulin free pancreatic extract (depropanex) (8, 14), (d) Physostigmine (eserine), (e) Pilocarpine (18) and (f) Acetylcholine (1, 26). Law (26, 27) reports good success in the treatment of giant colon by the use of acetyl B methyl choline. He prefers the bromide salt and advises that the drug is best given about ½ to 1 hour after breakfast and in the afternoon. The initial dosage is 0.1 gm. being increased by 0.1 gm. in 2 or 3 days if necessary. Physostigmine, pilocarpine and acetylcholine have too many distressing side effects to be useful in the dosage required.

Those drugs that act on the parasympathetic nervous system to *decrease* its tonus are: (a) Atropine (16), (b) Syntropan (2, 26). Just how a disease can be helped by drugs with directly opposite effects is not clear and several complicated theories have arisen, but have no definite proof (16). This again suggests that the disease megacolon is one of multiple causes, and that many different yet similar conditions are classified under the term of megacolon.

Those drugs whose action is directly on the smooth muscles are: (a) Pituitrin (b) Pitressin (31, 48). Those drugs that act on some part of the sympathetic nervous system to decrease its activity such as priscoline or etamon are yet to be tried in the treatment of giant colon.

Spinal anesthesia as a method of treating megacolon was first reported by Morton and Scott (39) who found that certain patients will have a remission in the disease if not a clinical cure. Repeated spinal anesthesia may help where one has failed. If the anesthesia is effective, conservative treatment should be continued some 3 to 4 months before considering any surgical procedure. Many authors prefer a lumbar paravertebral block or a splanchnic block (29, 34) to spinal anesthesia because they believe that the results are difficult to evaluate after the spinal anesthesia since both the divisions of the autonomic nervous system are paralyzed by spinal blocks. If a lumbar sympathectomy or splanchnic resection is contemplated, diagnostic block should be carefully done to evaluate the usefulness of the surgery. After blocking, it is often of value to watch the bowel fluoroscopically after a small amount of barium is injected. Those patients who temporarily respond dramatically to spinal anesthesia or to procaine blocks of the sympathetics, and who show little clinical improvement over a period of months and after repeated blocks, should be considered candidates for a resection of the lumbar ganglia, splanchnic nerves or the presacral plexus. The patients on whom such a procedure will be carried out are limited but, if chosen well, the results will be good. Pässler (32) collected 117 cases from the literature and found that 102 were improved after sympathectomy. There were 12 failures, and 3 deaths in this series.

The functional results after splanchnic resection are excellent, but are not as rapid as when a lumbar sympathectomy is done (29). Relapses after 6 years are reported (43) after lumbar sympathectomy. Impotence in the male, and the warm dry legs are drawbacks to the procedure. Splanchnectomy has the advantage of avoiding these two real obstacles.

Rankin (37) has proposed the resection of the presacral nerve and the inferior mesenteric plexus for megacolon, but it is a dangerous procedure in children and probably removes both sympathetic and parasympathetic fibres (45). The results are parallel to those seen after lumbar sympathectomy. Recently Smithy and Kredel (42) reported good results following presacral neuronectomy in 3 cases of acquired megacolon (pseudomegacolon).

Many operations on the colon have been proposed, but most of these, such as ileostomy, colostomy, colopexy or coloplication, etc. have been abandoned. Colectomy alone has a mortality rate of about 25 per cent (49). Cattell (7) reserves colectomy for the advanced cases of megacolon with atrophic bowel. Whitehouse (49) believes that cases of segmental megacolon, dolichocolon, and atrophic colon are candidates for colectomy. After resection, there may be dilatation of the colon proximal to the anastamosis and because of this Cattell advises subtotal colectomy. Resection should be done by the modified Mikulicz colostomy or by a long side to side anastamosis between the tinea (40). Bockus (6) states that colectomy be reserved for those patients who will probably die if not subjected to resection. It should be pointed out that the time for colectomy should be chosen wisely and that the patient should not be allowed to go downhill too far before resection of the involved bowel is advised. The high mortality rate seen as a result of colectomy in cases of megacolon results in part, from the large operative procedure done on a patient who is chronically ill and only a fair operative risk. This situation should be avoided.

SUMMARY

Megacolon is a rare disease of unknown etiology, but probably results from any one of many causes. It is a disease that rarely causes death and is usually compatible with life. Treatment should be medical until an acute emergency arises, or until the patient's condition is seen to be getting progressively worse in spite of good medical management and then the operation to be done must be decided upon utilizing all known facts.

Note: Since the writing of this paper, Swenson, (Pediat., in press and personal communication) has reported the use of a modified pull through operation for removal of the narrow bowel below the dilated sigmoid in 36 cases of megacolon. The basis of the operative procedure is dyskinesia of the rectum and rectosigmoid as demonstrated by a special type of barium enema. Follow-ups have been between 1 and 2 years, and there has been no recurrence in these patients. There was 1 postoperative death. The narrow bowel below the dilated sigmoid is removed along with 5 to 6 centimeters over the adjacent dilated bowel. Swenson has found that there is an absence of ganglion cells for this distance into the dilated bowel.

This report is interesting because of the fact that the dilated bowel is left intact and that the operative procedure for the first time is directed toward the narrow distal colon.

BIBLIOGRAPHY

1. Adson, A. W.: Hirschsprung's disease; indications for and results obtained by sympathectomy. Surgery **1**: 859, 1937.
2. Alway, R.: Megacolon. Staff Meet. Bull. Hosp. Univer. Minn. **13**: 46, 1941.
3. Alway, R.: Medical management of megacolon. Journal-Lancet **62**: 184, 1942.
4. Bate, A.: Hirschsprung's disease, A sub-syndrome of congenital hypothyroidism, Kentucky M. J. **35**: 469, 1937.
5. Bianchi, A. E.: Pathologic anatomy of megacolon. Arch. de enferm. d. ap. digest. y de la nutricion **17**: 283, (Dec. 1941 & Jan. 1942).
6. Bockus, H. L.: Gastroenterology, Philadelphia. W. B. Saunders Co., 1944, **2**: 398 ff.
7. Cattell, R. B., and Colcock, B. P.: Congenital megacolon. S. Clin. North America **26**: 644, 1946.
8. Duran, C.: Congenital mega-dolichocolon in an infant with mongolism and its treatment with pancreatic tissue. Bol. Soc. Cubana de pediat. **10**: 487, 1938.
9. Etzel, E.: Megaoesophagus and its neuropathology. Guy's Hospital Report **87**: 158, 1937.
10. Etzel, E.: May the disease complex that includes mega-esophagus, megacolon and mega-ureter be cuaed by chronic B_1 deficiency? Am. J. M. Sc. **203**: 87, 1942.

11. Fenwick, W. S.: Hypertrophy and dilatation of the colon in infancy. Brit. M. J. **2:** 564, 1900.
12. Finney, J. M. T.: Congenital idiopathic dilitation of the colon (Hirschsprung's disease) Surg., Gynec. & Obst. **6:** 624, 1908.
13. Formade, H. F.: A case of great growth of the colon causing coprostasis or habitual constipation. Univ. M. Mag. Philadelphia **4:** 628, 1891.
14. Grimson, K. S., Van de Grift, H. N. and Draty, H. M.: Management and prognosis of megacolon (Hirschsprung's disease)—review of 24 cases. Am. J. Dis. of Child. **68:** 102, 1944.
15. Hawkins, H. P.: Remarks on idiopathic dilatation of the colon. Brit. M. J. **1:** 477, 1907.
16. Herrmann, L. G.: The management of megacolon (Hirschsprung's disease). S. Clin. North America **26:** 1170, 1946.
17. Hirschsprung, H.: Stuhltragheit Neugeboner in Folge von Dilitation und Hypertrophie des Colons. Jahrb. f. Kinderh. u Physische Erziehung **27:** 1, 1888.
18. Holt, L. E. and McIntosh, R.: Holt's disease of infancy and childhood. New York Appelton-Century 1940 pgs. 455 ff., 11 ed.
19. Homans, J.: Textbook of Surgery; Springfield, C. C. Thomas, p. 312 ff.
20. Hurst, A. F.: Anal achalasia and megacolon (Hirschsprung's disease; idiopathic dilitation of the colon). Guy's Hospital Report **84:** 317, 1934.
21. Hurst, A. F. and Gaymer-Jones, J.: A Case of mega-ureter due to achalasia of the uretero-vesical sphincter. Guy's Hospital Report **80:** 334, 1930.
22. Jayle, F.: La dilitation congenital idiopathic du colon obsenee au XVII siecle; Presse Med., Paris **17:** 803, 1909.
23. Jordan, S. M. and Swarts, J.; Quoted by Cattell, R. B. and Colcock, B. P.: S. Clin. North America **26:** 644, 1946.
24. Judd, E. S. and Adson, A. E.: Lumbar sympathetic ganglionectomy and ramisection for congenital idiopathic dilitation of the colon. Ann. Surg. **88:** 479, 1928.
25. Klingman, W. O.: The treatment of neurogenic megacolon with selective drugs. J. Pediat. **13:** 805, 1938.
26. Law, J. L.: The treatment of megacolon with parasympathetic drugs. J. A. M. A. **114:** 2537, 1940.
27. Law, J. L.: Treatment of megacolon with acetyl-beta-methyl choline bromide. Am. J. Dis. of Child. **60:** 262, 1940.
28. Leithauser, D. J.: Atypical adynamic ileus apparently caused by nutritional (thiamine chloride) deficiency. Surg., Gynec., & Obst. **86:** 543, 1948.
29. Mallet-Guy, P.; Cuvereaux, M. and Marion, P.: Lumbar infiltration, lumbar sympathectomy and splanchnectomy in megacolon and dolichocolon. J. d. Chir. **58:** 179, 1941–42.
30. Mya, G.: One osservazionidi di dilatazione ed ipertrofia congebuta del colon (megacolon congenito) sperimentale. Firenze, **48:** 215, 1894.
31. Nosik, W. A. and Crile, G. Jr.: Hirschsprung's disease. S. Clin. North America, **19:** 1163, 1939.
32. Pässer, H. W.: Megaholon und Megazystis; Entstehung, Erkennung und Behandlung. J. A. Barth, Co. Leipzig (1938).
33. Peterman, M. G.: Congenital megacolon, treatment with mecholyl bromide. J. Ped. **27:** 484, 1945.
34. Plichet, A.: Infiltration of lumbar sympathetic and splanchnic nerves in treatment of megacolon and dolichocolon. Presse Méd. **50:** 105, 1942.
35. Prini, I. and Magalhaes, A.: The treatment of megacolon by sympathectomy, Prensa Méd. Argent. **27:** 1577, 1940.

36. Rankin, F. W. and Learmonth, J. R.: Section of the sympathetic nerves of the distal part of the colon and the rectum in the treatment of Hirschsprung's disease and certain types of constipation. Ann. Surg. **92:** 710, 1930.
37. Rankin, F. W.: Megacolon. in Lewis' Practice of Surgery Hagerstown, Md. W. F Prior Co., 1944, Vol. VII Ch. 5, p. 71.
38. Robertson, H. F. and Kernohan, J. W.: The myenteric plexus in congenital megacolon. Proc. Staff. Meet. Mayo Clinic **13:** 123, 1938.
39. Scott, W. J. M. and Morton, J. J.: Sympathetic inhibition of the large intestine in Hirschspring's disease. J. Clin. Invest. **9:** 247, 1930.
40. Scott, W. J. M. and Serenati, Q.: Megacolon mechanisms and choice of treatment Surgery **20:** 603, 1946.
41. Shelby, H. J.: Dilatation of the colon; report of a case following the development of an aortic aneurysm, relieved by dilatation of the anal sphincters. Ann. Surg. **109:** 256, 1939.
42. Smithy, H. G. and Kredel, F. E.: Localized acquired megacolon treated by sympathectomy. Surgery **22:** 259, 1947.
43. de Takats, G. and Biggs, A. D.: Observations on congenital megacolon. J. Pediat. **13:** 819, 1938.
44. de Takats, G.: Acetylcholine as a diagnostic test in cases of congenital megacolon. Surg. Gynec. & Obst. **69:** 762, 1939.
45. Telford, E. D.: Discussion on megacolon. Proc. Roy. Soc. Med. **32:** 1145, 1939.
46. Tiffin, M. E.; Chandler, L. R. and Faber, H. K.: Localized absence of the ganglion cells of the myenteric plexus in congenital megacolon. Am. J. Dis. Child. **59:** 1071 1940.
47. Wade, R. B. and Royle, N. D.: Operative treatment of Hirschsprung's disease; a new method with explanation of the technique and results. M. J. Australia **1:** 137 1927.
48. White, J. C. and Smithwick, R. H.: The Autonomic Nervous System; 2nd ed. N. Y., The Macmillan Co. (1945).
49. Whitehouse, F.; Bargen, J. A. and Dixon, C. F.: Congenital megacolon; favorable end results of treatment by resection. Gastroenterology **1:** 922, 1943.

PROLAPSE OF THE UMBILICAL CORD*†

CHARLES V. BOWEN, M.D.

BALTIMORE, MARYLAND

The accidental prolapse of the umbilical cord before or during labor is of extremely serious import to the baby. It may also add greatly to the mother's risk because sometimes ill advised methods are resorted to in hope that the infant's life may be saved.

The incidence of prolapse of the cord varies slightly in different clinics. However, an average incidence of 0.85 was found in 2408 cases reported by various authors from 1907 to 1922 inclusive. Since that time four articles have appeared on this subject, and it is interesting to note that all report a lower incidence. In 1932 Kurzrock reported 100 cases, with an incidence of 0.59 per cent; in 1940 Mengert 58 cases, 0.66 per cent; in 1941 Bourgeois 155, 0.42 per cent; and in 1946 Gusberg 71 cases, 0.42 per cent.

This report deals with 71 instances of prolapsed cord seen at the University Hospital, Baltimore, from January 1, 1939 through December 31, 1948. During this time there were 17,488 deliveries of viable infants at this hospital, an incidence of 0.41 per cent or 1 case in each 250 deliveries.

In this particular series, the accident occurred twice as frequently in mothers who had previously borne children. However, this is not a constant finding and is of no great significance.

This table is interesting in that it demonstrates the greatly increased incidence of prolapse in breech and transverse presentations, and partly explains the high fetal mortality seen in these conditions. The cause is quite simple: the presenting part does not accurately fit the pelvis, and the cord falls through into the vagina or externally.

While it is true that in most instances prolapse does not occur until the patient is fairly well established in labor, it should be remembered that it can occur quite early. Since the membranes must be ruptured before the cord can descend, the time when rupture occurs is important. This is especially true when the presenting part has not entered the pelvis or does not completely fill it. Certainly, in these instances, artificial rupture of the membranes to induce labor would appear to be contraindicated.

From this table it can be seen that in 41 of the 71 cases, there was practically no hope for the child when the diagnosis was made. This is a very common finding in these cases and in large part accounts for the high fetal mortality.

In 8 instances fetal loss could be ascribed to causes other than prolapse

---

* From the Department of Obstetrics, School of Medicine, University of Maryland, Baltimore, Maryland.

† Received for publication May 9, 1949.

of the cord. Five infants weighed less than 1600 grams, so that survival under the best of circumstances was improbable. In 2 cases delivery was very difficult, and in 1 the uterus was ruptured and fetal death resulted.

TABLE 1

No. cases of prolapsed cord (Including 5 sets of twins)		71
Primigravidas	24	
Multigravidas	47	71
Labor at term	58	
Labor premature	13	71

TABLE 2

Presentation

Vertex	37
Brow	1
Breech	20
Transverse	13

TABLE 3

Labor

Not in labor	2
Early in labor	4
Late in labor	65

TABLE 4

Pulsations

Good	30
Poor	5
Absent	36

TABLE 5

Fetal Mortality

Stillbirths	42
Neonatal deaths	4
Total mortality	46 or 64.78%

TABLE 6

Maternal Mortality and Morbidity

Died	1 or 1.4%
Morbid	15 or 21.12%

However, even if these 8 deaths were deducted, the mortality is still very high, 38 or 53.52 per cent.

The maternal death was in a multigravida who was admitted because of vaginal bleeding and on examination was found to have a marginal placenta previa, and a transverse lie with a prolapse of the cord. An internal podalic version and breech extraction were done, resulting in the delivery of a dead baby. The patient went into severe shock; however, she lived for 5 days. Death was ascribed to puerperal infection, but there existed distinct possibility of a ruptured uterus which was not recognized. An autopsy was not performed.

Treatment in this series from the standpoint of the prolapse itself consisted of internal podalic version and breech extraction 9 times and hysterostomatomy and forceps delivery 3 times. In the remaining 59 cases no great effort was made to hasten delivery in the interest of the child.

The principal lesson to be learned from this report would appear to be that stated in the opening paragraph, a lesson of sufficient importance to bear repeating; prolapse of the umbilical cord results in an unavoidably high fetal mortality which must always be remembered. The life or the safety of the mother should not be jeopardized in a vain attempt to preserve the life of an already doomed infant. This statement is not to be construed as meaning that none of these babies may be saved, for proper and prompt treatment is sometimes successful. Each case must be individualized and treated on its merits.

One of the most important steps in the treatment is prophylaxis. Labor should not be induced by rupturing the membranes in the face of a contracted pelvis, unfavorable presentation, or favorable presentation in a normal pelvis when the presenting part is unengaged. This is inviting disaster. When labor begins spontaneously and, upon examination, a breech, a transverse or an oblique type of presentation is found, efforts should be instituted toward preserving the integrity of the membranes as long as possible. Examinations, either rectal or vaginal should be minimal in number and done with the utmost gentleness. Some authors advise placing a hydrostatis dilator in the vagina and allowing it to remain until expelled by the descent of the baby or until complete dilation of the cervix.

When prolapse occurs, treatment will depend upon several factors. One of these is the condition of the baby, as evidenced by the pulsations of the cord. When these are absent or very weak, it should be evident that nothing can be done for the baby. All attention should then be given to the mother and delivery carried out in the most conservative manner possible. Should pulsations be present and of good quality, further treatment will be indicated by the findings.

Replacement of the cord is universally recommended, and the literature would indicate it to be a simple procedure. Personal experience, however, has been exactly opposite to this. The cord is most difficult to handle and even if replaced, there is a marked tendency for prolapse to recur. Therefore, valuable time is lost and nothing is accomplished. The patient should be immediately placed in a position which elevates the hips or the buttocks and kept there until a decision is reached and preparations made for the indicated operation or procedure. This will vary from waiting for spontaneous delivery to cesarean section. When the cervix is fully dilated and labor is progressing rapidly, it is evident that no treatment is necessary other than that of administering oxygen to the mother. On the other hand, when prolapse occurs early and the cervix is less than 4 cms. dilated, abdominal delivery offers the best chance for the baby. When the proper technic is observed, this should be reasonably safe for the mother.

Between these two extremes, many types of cases will be seen and many operations will be indicated. To discuss them all would not be practical in an article of this type. On operation to which resort is frequently had is internal podalic version and breech extraction. Under proper conditions this is a most valuable operation. However, when the necessary criteria are not present, it is one of the most dangerous operations that can be performed on the parturient. If the truth were known, the number of women who have lost their lives as the result of an ill-advised internal podalic version and breech extraction would be appalling. To this can be added the immense amount of resulting soft tissue damage. There is also the fact that in these cases it is rare that a baby is saved. It is therefore easy to understand why such an operation should be done only after careful consideration and evaluation. Furthermore, there must be the utmost gentleness exercised in carrying out this procedure.

SUMMARY

Prolapse of the umbilical cord carries with it a very high (about 50 per cent) mortality for the baby. It is suggested that this be kept in mind when temptation exists to enter upon ill-advised and dangerous operations to accomplish delivery. In the large majority of these cases, the life of the baby will not be saved and that of the mother may be lost. On the other hand, if the loss of the baby is accepted as inevitable in certain of these cases and the mother protected in every possible manner, the results eventually will be much better.

BIBLIOGRAPHY

1. Bourgeois, G. A.: Prolapse of the umbilical cord; analysis of 155 cases. Am. J. Obst. & Gynec. **41:** 837, 1941.
2. DeLee, J. B.: Principles and Practice of Obstetrics, Philadelphia and London W. B. Saunders Company, 1920, p. 642.
3. Gusberg, S. B.: Prolapse of the umbilical cord. Am. J. Obst. & Gynec. **52:** 826, 1949.
4. Kibel, I.: Pregnancy at term in prolapsed uterus with prolapse of the cord. Am. J. Obst. & Gynec. **47:** 703, 1944.
5. Kurzrock, J.: Prolapsed umbilical cord; analysis of 100 cases. Am. J. Obst. & Gynec. **23:** 403, 1932.
6. McCurdy, R. A.: Prolapse of umbilical cord. J. Kansas M. Soc. **38:** 206, 1937.
7. Mengert, W. F. and Longwell, F. H.: Prolapse of umbilical cord, analysis of 58 cases. Am. J. Obst. & Gynec. **40:** 79, 1940.
8. Mitchell, A. M.: Vagitus uterinus with prolapse of umbilical cord. Am. J. Obst. & Gynec. **48:** 547, 1944.

TREATMENT OF TINEA CAPITIS WITH SPECIAL REFERENCE TO THE USE OF BENZYL BENZOATE*†

RAYMOND C. V. ROBINSON, M.D.

BALTIMORE, MARYLAND

During the past 8 years the eastern half of the United States has been involved in an epidemic of tinea capitis which has been caused almost entirely, according to most investigators, by *Microsporum audouini*. However, in spite of the advances in general therapeutics during this time, including a number of new fungicidal or fungistatic drugs, no method has been developed of adequately controlling this disease of childhood, by topical medication alone.

Many new drugs have been given clinical trials, with varying degrees of enthusiasm. Some have retained their popularity and others no longer enjoy wide usage. Some have been shown to be clinically successful but give such a high rate of untoward reactions as to preclude their use except in selected cases. No one substance or mixture of substances has been accepted as universally adequate in the treatment of tinea capitis.

Since the primary objective of this paper is to introduce still another method of local therapy, the author feels it would be wise to survey the present status of the various treatments that enjoy more or less wide usage at the present time.

Of the fatty acid group of preparations, propionic and undecylenic acids and their various salts seem to offer more hope of satisfactory results than other aliphatic compounds. Peck and Rosenfeld (1) reported the fungistatic properties of sodium undecylenate in 1938 and in the following year the same workers (2) claimed beneficial results in the superficial mycoses with the use of sodium propionate.

A few years later Keeney (3) corroborated the work of Peck and Rosenfeld, reporting very good results clinically in the treatment of various mycoses.

Few dermatologists will deny that the propionates and undecylenates are of value but, on the other hand, at least one group of authors (4) have claimed the cure rate was no greater than with other topical applications.

Trimethyl cetyl ammonium pentachlorphenate (TCAP) in a combination of solvents requiring the use of two solutions (A and B) was used by MacKee and his co-workers (5) who cured 54 per cent of cases of tinea capitis caused by *M. audouini*. The authors admit that the procedure is time consuming and complicated, and furthermore, untoward local reactions were noted with the preparation, at least in the University of Maryland Skin Clinic.

---

* From the Department of Dermatology, (School of Medicine) University of Maryland, Baltimore, Maryland.

† Read at the session on therapy, American Academy of Dermatology, December 9, 1948.

Lewis, Hopper and Reiss (6) showed that although some of the androgens and estrogens exhibited *in vitro* inhibitory action on fungi, the results when applied locally to the scalp were disappointing.

A cure rate of 64–67 per cent was claimed by Strickler (7) with the use of iodine in a complicated vehicle composed of red blood cells, sodium chloride, chlorophyll, etc., but the author can find no subsequent reference in the literature to verify these results.

The antibiotics have not as yet been adequately explored although *in vitro* fungistatic claims have been made for two. Both bacillomycin (8) and aureomycin (9) have been reported successful but at least one observer (10) denies that aureomycin inhibits the growth of the microsporum group.

Miller, Lowenfish and Beattie, (4) utilizing 928 previously untreated cases of tinea capitis, 96.9 per cent of which were due to *M. audouini*, surveyed the results of therapy with many different agents. The per cent of cures with undecylenic acid and sodium propionate were 9.1 per cent and 10 per cent, respectively. This differs significantly from the results of Pillsbury and Livingood (11) who reported that 27 per cent of *M. audouini* infections were cured either spontaneously or with simple local remedies.

Miller and his co-workers felt that the ideal local remedy would be a fungicide incorporated in a solvent capable of penetration into the follicle and keratin of the hair. They also emphasized that they considered manual epilation of all fluorescent hairs of paramount importance when only chemotherapy was utilized. This latter observation has been noted by other authors.

Ammoniated mercury ointment, 5 to 10 per cent, retains a useful place in the treatment of tinea capitis and is still used in many dermatology clinics because of its availability and economy, in spite of the disappointing results in *M. audouini* infections. Since no method of local therapy has given uniformly good cure rates in the hands of various observers, many dermatologists feel that roentgen ray epilation is indicated in most if not all cases of tinea capitis caused by *M. audouini*.

It is agreed that, in competent hands, permanent alopecia resulting from the use of roentgen rays is a remote danger, and the author feels that there should be no hesitation in the employment of any of the standard techniques as an office procedure. On the other hand, the limited number of qualified dermatologists and roentgenologists necessarily narrows the scope of its usefulness chiefly to private practice in larger urban districts. Thus in the Hagerstown epidemic (12) such a procedure was not feasible, and local measures were used as a matter of expediency.

Again, it is accepted by some authorities that even following epilation by roentgenology, some local application is needed to accomplish a cure.

Since there is no one local remedy generally accepted as efficient in most cases of *M. audouini* infections, the addition to the armamentarium of any substance or mixture of substances which is at least as effective as most of the known methods, would seem to be welcome.

In the spring and early summer of 1947 there was under investigation at the University of Maryland Skin Clinic a mixture of tyrothricin and benzyl benzoate.* This preparation was subsequently evaluated as useful in the treatment of secondarily infected scabies (13).

During the course of the study at one of the clinic sessions, the parents of 2 of the patients casually remarked that the childrens' heads were also improving. Examination of these 2 unrelated children under the Wood's light revealed brilliantly green fluorescing areas indicative of tinea capitis, and subsequent cultures of the infected hairs were positive for *M. audouini* in both instances.

On the basis of this observation, *in vitro* studies were carried out to determine if either of the active ingredients was fungicidal. A 4 per cent solution of tyrothricin and a 25 per cent emulsion of benzyl benzoate were employed for this purpose. It was found that while the solution of tyrothricin did not affect the fluorescence, the hairs rapidly lost their fluorescence in the benzyl benzoate emulsion and no longer gave a positive culture for *M. audouini* on Sabouraud medium (singular).

An extensive search of the literature failed to reveal previous use of benzyl benzoate as a possible fungicidal or fungistatic drug although it has been widely used in the treatment of scabies for at least 8 years.

According to the United States Pharmacopoeia, benzyl benzoate is a clear, colorless oily liquid having a slightly aromatic odor and a sharp burning taste, containing not less than 99 per cent benzyl benzoate ($C_{14}H_{12}O_2$.) It is insoluble in water and glycerin and is miscible with alcohol, ether and chloroform. It is the benzyl ester of benzoic acid and was introduced into therapeutics by Macht in 1918 as a relaxer of smooth muscle. For a time it enjoyed wide usage in this capacity but was soon discarded and is no longer used for that purpose.

About 8 years ago benzyl benzoate was reported to be effective in the treatment of scabies in the form of a saponified suspension or emulsion and has since become one of the major methods of combating this disease.

In an attempt to find an explanation of its usefulness in cutaneous mycoses, the pharmacology of its components, benzyl alcohol and benzoic acid, was investigated. The former is an uncertain local anesthetic and is somewhat effective in a solution of alcohol or as a 10 per cent ointment.

Benzoic acid is weakly germicidal, chiefly in acid media, and in such media will inhibit some yeasts in a concentration of 0.05 per cent. The inorganic salts of the acid lack this bactericidal effect in the same concentration.

---

* Supplied by Sharp and Dohme (Tyroscabe).

For the purpose of further evaluation in fungus diseases it was decided to give the drug more adequate clinical trial, and 8 children with previously untreated tinea capitis were selected and treated with the tyrothricin-benzyl benzoate solution.

Since many authors claim that the cure rate with any topical application for tinea capitis is increased by manual epilation, it was decided that this procedure would not be used in any of the patients in this or in subsequent treatment schedules.

The children's heads were shaved or closely clipped at weekly or biweekly intervals, and the parents were instructed to massage the whole scalp with the solution 4 times daily, and encouraged to spend at least 10 minutes for each application.

In all 8 of the children there were 2 or more areas of brilliant greenish fluorescence measuring 1 or more centimeters in diameter each. A culture of *M. audouini* was obtained from infected hairs in all cases. Each child was examined under the Wood's light weekly by the author.

By the end of the first week, all the mothers or guardians stated that there seemed to be less scaling, and they thought there was some improvement. After 4 weeks, all showed diminution in the size of the fluorescing areas.

There were some difficulties in administration, one of the most important being that the drug is supplied in six ounce bottles of the liquid and a bottle lasted less than 1 week per child.

A 50 per cent emulsion of benzyl benzoate was tried next,* using a similar outline of treatment. Again in 6 patients, improvement was noted in 2 to 4 weeks. However, the same difficulty was encountered, it being a liquid preparation.

Having proved to the author's satisfaction that there was slight to marked improvement in 16 patients, it was decided to try to find an ointment base which would tend to carry the active ingredient into the hair follicles and at the same time give a low percentage of cutaneous reactions.

The base which was finally found most practicable consisted of a combination of animal fats and waxes which would hold 25 parts of benzyl benzoate in 100 parts of finished ointment, being solid at room temperature and semi-liquid at body temperature.

The formula for the ointment is as follows:

Benzyl benzoate	25
Spermaceti	10
White wax	10
Anhydrous wool fat	25
Lard qs to	100

---

* Courtesy of Burroughs, Wellcome and Co.

It is easily made, the fats and waxes being melted and allowed to cool until the container can be comfortably touched with the hand then the benzyl benzoate is incorporated and the liquid ointment poured into suitable dispensing tins or jars. Unless the room is warm, the ointment solidifies in 10 to 15 hours.

A total of 53 patients with tinea capitis were treated with this ointment; of these only 3 were white children, the remainder Negro. Eighty-five per cent of the patients treated were Negro boys.

The patients' ages ranged from 2 to 10 years, the average being 4.5 years. Duration of the disease prior to benzyl benzoate therapy varied from 1 week to 1 year, with an average duration of 4 months. Cultures of *M. audouini* were obtained from 42 patients, the remaining showing only contaminants and these failed to return for repeat cultures or follow-up. One child had not only fluorescing areas in the scalp but an annular lesion on the back of the neck from which *M. audouini* was cultured.

Of the 42 patients who were subsequently followed for periods of 1 to 4 months, 5 had been previously treated with the 50 per cent emulsion, 6 with the tyrothricin-benzyl benzoate solution, 1 with sulfur ointment, 2 with ammoniated mercury ointment and 1 with an experimental ointment of furane methyl ether.*

Observations were made at weekly intervals for the first 3 weeks, then at biweekly intervals for the duration of treatment.

In view of the relative infrequency of subjective symptoms, it was decided that actual reduction of fluorescent areas would be the only criterion of improvement. Absence of fluorescing hairs for a minimum of 3 weeks, plus inability to culture *M. audouini* from hairs taken from the areas of previous lesions, were termed a "cure."

Fourteen, or 33 per cent, of the 42 cases followed, were "cured" in from 4 weeks to 2 months, the average being 6 weeks. All of the remaining patients except 2 showed definite improvement. In 3 patients no fluorescence could be noted 4 weeks after the beginning of treatment. By the fifth week 2 more patients were "cured." In the remaining nine, fluorescence gradually subsided during the 2 month period.

Five patients developed kerion within 3 weeks after benzyl benzoate was started. In these cases, the ointment was stopped and the tyrothricin and benzyl benzoate solution substituted, with alleviation of symptoms within a week. In none of these 5 was a "cure" obtained during the period of observation although the areas of fluorescence decreased in size.

One patient developed an acute contact dermatitis 3 days after the ointment was first used. This was the only instance of severe reaction encountered.

---

* Supplied by the Winthrop Chemical Co.

SUMMARY

Forty-two children ranging in age from 2 to 10 years were treated for tinea capitis with a 25 per cent benzyl benzoate ointment. Fourteen of these patients showed complete disappearance of fluorescence in from 2 weeks to 2 months. Two patients failed to show any improvement. In 26 of the children definite diminution in size of the involved areas was noted, but fluorescing hairs were still present at the end of 2 months.

Only one severe reaction was noted.

In 5 patients in whom kerion developed, it was felt that substitution of the tyrothricin-benzyl benzoate mixture in place of the ointment was of distinct benefit.

CONCLUSION

It is the feeling of the author that although the results are not startling, the use of benzyl benzoate is of sufficient value to continue the investigation of the drug and evaluate its usefulness in the treatment of tinea capitis and possibly other superficial mycoses.

BIBLIOGRAPHY

1. Peck, S. M., Rosenfeld, H.: Effects of hydrogen ion concentration, fatty acids and vitamin C on growth of fungi. J. Invest. Dermat. **1:** 237–265 (Aug.) 1938.
2. Peck, S. M., Rosenfeld, H., Leifer, W., and Bierman, W.: Role of sweat as fungicide with special reference to use of constituents of sweat in therapy of fungus infections. Arch. Dermat. & Syph. **39:** 126–148 (Jan.) 1939.
3. Keeney, E. L.: Fungistatic and fungicidal effect of sodium propionate on common pathogens. Bull. Johns Hopkins Hosp. **73:** 379–390, (Nov.) 1943.
4. Miller, G. L., Lowenfish, F. P., and Beattie, G. F.: Local treatment of tinea capitis. J. A. M. A. **132:** 67–70 (Sept. 14) 1946.
5. MacKee, G. M., Herrmann, F., and Karp, F. L.: New treatment for anthropophilic tinea tonsurans (Microsporon audouini). J. Invest. Dermat. **7:** 43–52 (Feb.) 1946.
6. Lewis, G. M., Hopper, M. E., and Reiss, F.: Ringworm of the scalp. J. A. M. A. **132:** 62–65 (Sept. 14) 1946.
7. Strickler, A.: Tinea capitis. J. A. M. A. **132:** 65–67 (Sept. 14) 1946.
8. Landy, M., Warren, G. H., Rosenman, S. B., and Colis, L. G.: Bacillomycin, an antibiotic from bacillus subtilis active against pathogenic fungi. Proc. Soc. Exp. Biol. & Med. **67:** 539, 1948.
9. Price, C. W., Randall, W. A., and Welch, H.: Bacteriological studies of aureomycin, conference on aureomycin—A new antibiotic, New York, July 21, 1948.
10. Bereston, E. S.: Personal communication.
11. Livingood, C. S., and Pillsbury, D. M.: Ringworm of scalp: prolonged observation, family investigation, cultural and immunologic studies in 130 cases. J. Invest. Dermat. **4:** 43–57 (Feb.) 1941.
12. Schwartz, L., Peck, S. M., Botornick, I., Leibovitz, A. L., and Frazier, E. S.: Control of ringworm of scalp, J. A. M. A. **132:** 58–62 (Sept. 14) 1946.
13. Robinson, H. M., Jr., and Robinson, H. M.: A newer treatment for scabies. South. Med. J. **40:** 1010–1013 (Dec.) 1947.

ACUTE PORPHYRIA—REPORT OF A CASE RECURRING OVER A PERIOD OF TWENTY-SEVEN YEARS.*†

S. EDWIN MULLER, M.D.

BALTIMORE, MARYLAND

Several case reports with reviews of the literature and classification of this disease have appeared recently (1, 2, 3). This case is added because of the unusually long and interesting history and the variety of symptoms presented.

CASE REPORT

A 23 year old white housewife of Italian descent was admitted to Mercy Hospital in August 1922, complaining of severe, generalized abdominal pain, nausea, vomiting and obstipation of 4 days' duration. The family history was normal. She had suffered from constipation since childhood. The past history was otherwise normal.

On admission the temperature was 99.6 F; pulse 100; respirations 22. Her general condition was good. There was generalized tenderness over the abdomen, more pronounced in the right lower quadrant. The leucocytes numbered 32,400 of which 94 per cent were polymorphonuclear. No urinalysis was recorded. A diagnosis of acute appendicitis was made. At operation the appendix was not found. A small mass of "necrotic tissue" thought to be a gland was removed from the right lower quadrant. Severe generalized abdominal pain continued for 4 days post-operatively. She was discharged on the eleventh hospital day without symptoms.

The patient was readmitted in May 1935, complaining of loss of appetite, nausea, vomiting and severe abdominal pain of 3 days' duration. She had taken enemas regularly during the past 3 weeks for constipation. (Except for constipation) She had been well since the last admission.

Summary of Physical Examination: The temperature was 99 F; pulse 98; respirations 20. There was moderate tenderness in the left upper quadrant. The abdomen was moderately distended. The leucocytes numbered 12,000 of which 88 per cent were polymorphonuclear. A diagnosis of partial intestinal obstruction was made and a laparotomy performed. Several thin adhesions were found about the caecum. The entire bowel was collapsed. A retrocaecal appendix was found and removed. It was normal on microscopic examination. The symptoms present on admission continued for the next 6 days. White blood cell counts during this time were 23,000 and 29,000 of which 90 per cent were polymorphonuclear. The patient was discharged on the twelfth hospital day.

In March 1940 she was readmitted to the surgical service with acute mid-upper abdominal pain of 3 days' duration. Nausea and vomiting were present after eating. She had not had a bowel movement for 6 days. Cramping pains began suddenly and gradually became more severe and continuous over the 3 day period. She had been well since her last admission, and had taken no drugs but aspirin and milk of magnesia.

Physical Examination on admission: The temperature was 98 F; pulse 90; respirations 20; and blood pressure 118 systolic over 80 diastolic. The patient was depressed. The

---

* From the Medical Service, Mercy Hospital, (School of Medicine) University of Maryland. Baltimore, Maryland.

† Received for publication July 8, 1949.

exposed skin surfaces were darkly pigmented. There was moderate tenderness and rigidity of the upper abdomen. The dorsum of the left hand was swollen (she stated that she had had a slight injury several days before). Urinalysis: cloudy yellow; trace of albumin; 15 white blood count/Hpf, catheterized specimen. Blood count: 66 per cent hemoglobin; 5,400,000 red blood count; 26,850 white blood count; 16 Stab.; 67 Seg.; 17 Lymph. A diagnosis of partial intestinal obstruction was made and a laparotomy performed. "The small intestine was entirely collapsed. Adhesions to the abdominal wall were present at the caecum. The large bowel was somewhat dilated but not markedly so." After operation the abdominal pain continued. Two days later pain developed in the swollen left hand and radiated into the left shoulder. A slight weakness was noted in the left hand and forearm. Extreme restlessness, insomnia and depression followed. Threats of suicide and several attempts to open the window were made. Constant attendance and restraint were necessary. Six days after the operation a wrist drop was complete in the left hand and swelling similar to that present in the left developed in the right hand followed also by wrist drop. Flaccid ascending paralysis then began in both ankles and progressed for 2 months after which time the patient had complete paralysis of all extremities and sphincters with difficulty in speaking and swallowing. Urine specimens at this time were found to turn brownish-red on standing and to contain large amounts of coproporphyrin III* and a diagnosis of hematoporphyrinuria was made.

During the first month she received 30 gr. of phenobarbital. All medication was discontinued at this time except multivitamin therapy. At the end of 4 months she was much improved with a slight return of muscle power to the forearms and hands. Spontaneous bowel movements occurred. There was extreme atrophy of all muscle groups of the extremities. Improvement was gradual and at the end of 4 months she was able to be up in a chair. She complained of pain in the muscles of the extremities but continued to gain strength. At the end of the fifth month barbiturates, about 1½ gr. daily were again given for restlessness. Abdominal pain, depression and all of the symptoms presented at the time of admission (but to a lesser extent) returned and continued for 3 weeks. On the two hundred and sixtieth hospital day 2 generalized convulsive seizures occurred lasting 6 to 8 minutes each, followed 6 hours later by a seizure involving right side of face, right arm and leg and another 15 minutes later involving left side only. She continued to complain of abdominal pain until the end of the seventh hospital month. Barbiturates were again discontinued and no severe pain occurred until discharge at the end of the eighth month.

She showed gradual improvement at home and was symptom free except for weakness resulting from generalized muscular atrophy but was able to walk about.

In June 1941, 5 months after leaving the hospital, she was again admitted and a radical mastectomy was performed for papillary carcinoma of the left breast.

She then obtained employment as a clerk and got along well until February 1946 when she was admitted to another hospital where a hysterectomy was done for uterine fibroids. She received a total of 9 gr. of phenobarbital during the course in the hospital. One day before discharge she developed abdominal pain which continued with marked constipation for the next 10 days. At this time she noticed marked weakness and swelling of the left arm and hand.

She was admitted to Mercy Hospital in March 1946. She had not had a bowel movement for 3 days before admission although she had taken several enemas. Enemas with surgical pituitrin were ineffectual for the first 3 hospital days.

On admission she was markedly depressed and had not slept for several days. Abdominal pain was severe, and she was disoriented. Temperature was 98.6 F; pulse 90; respirations 20 and blood pressure 128 systolic over 80 diastolic. Her urine contained large amounts of coproporphyrin III. Urea 77; blood Kahn ++++ (negative 9 days later). Cephalin flocculation test 4+ in 24 hours; 4+ in 48 hours. She was given 150 mg. Niacinamide three times a day and Thiamine Hydrochloride 100 mg. twice a day. On the fifth hospital day the patient became completely disoriented. A generalized tonic and clonic convulsion with loss of bowel and bladder control occurred, lasting about 3 minutes. On the following day she was markedly improved and had no further symptoms except constipation which was relieved by enemas. Chloral hydrate and Bromides were given for sedation. She was discharged on the seventeenth hospital day. Since then she has been well and has returned to work. Repeated urine examinations have not shown abnormal amounts of porphyrin. The patient has never shown sensitivity to light. An examination under ultraviolet rays has revealed no fluorescence. Other members of her family have had no symptoms of porphyrin disturbances.

---

* Identified (by melting point) and spectroscopically by Dr. Charles E. Brambel at the Mercy Hospital Laboratory and Dr. A. H. Corwin at the Johns Hopkins University, Homewood.

COMMENT

This case presents the classic symptoms of acute porphyria; constipation, obstipation, severe colicky abdominal pain, leucocytosis, fever, depression, delirium, generalized and localized convulsive seizures and ascending paralysis.

SUMMARY

A case of acute recurrent porphyria is presented showing 4 crises over a period of 27 years. Three laparotomies have been performed because of the symptoms.

The evidence strongly suggests that phenobarbital may precipitate a crisis in this case.

BIBLIOGRAPHY

1. Nesbitt, Samuel: Acute porphyria, J. A. M. A. **124:** 286–294, (1944).
2. Prunty, F. T. G.: Acute porphyria. Arch. Int. Med. **77:** 623–643, (1946).
3. Pohl, A. W., and Roberts, I. R.: Chronic porphyria, Ann. Int. Med. **27:** 1028–1033 (1947).

THE USE OF AUREOMYCIN IN THE TREATMENT OF RUBEOLA*†

MILES E. DRAKE, Ph.D., M.D., JEROME IMBURG, B.S., M.D., and
J. EDMUND BRADLEY, M.D.

BALTIMORE, MARYLAND

Aureomycin is an antibiotic derived from *Streptomyces aureofaciens* which exhibits antibacterial activity against numerous gram-positive and gram-negative bacteria (1, 2, 3, 4). It is also effective against rickettsial (1, 5, 6) and viral (7, 8, 9) diseases. Since the viral activity of aureomycin is against the medium to large viruses, it was thought advisable to try aureomycin in rubeola.

The drug** was administered to 11 patients in 0.25 gram doses per os every 4 hours for six to eight doses and then 0.25 grams every 6 hours for eight to twelve doses. The twelfth patient received the drug intravenously. The 12 patients were between the ages of 5 months and 6 years, except 1 adult male physician. The criteria for the use of the drug were: temperature of 104 F. rectal, Koplik spots, photophobia, conjunctivitis, no rash to beginning rash about the ears. Six clinic patients were used as untreated controls.

In the cases here reported the effect was startling and dramatic. Within 4 to 12 hours after the drug was started, the photophobia was abolished and in 12 to 28 hours the temperature was 98.6 F. or below by rectum. The children were playing, eating and to all intents and purposes, well. However, the rash developed in the usual manner, and its duration did not appear to be altered by the drug. The duration of the cough appeared to be shortened. The 6 controls had photophobia for 48 hours to 96 hours after the Koplik spots appeared, and the temperature ranged from 102 F. rectal to 105 F. rectal for 72 to 120 hours.

CASE REPORTS

Two typical treated and 1 untreated cases are reported.

Case 1. M. F. a 5 year old white male was admitted to the pediatric service on January 17, 1949 with a chief complaint of unexplained fever of 1 day duration. During this time his temperature had varied between 101.4 F. and 105F. rectal. The past history revealed he had not had rubella, rubeola, chicken pox or small pox. He had had an occasional

---

*Department of Pediatrics, (School of Medicine) University of Maryland, Baltimore, Maryland

†Received for publication May 26, 1949.

**Aureomycin supplied by the Lederle Laboratories Division of the American Cyanamid Company, New York, New York.

upper respiratory infection. The past history was non-contributory. The physical examination on admission revealed an acutely ill male child in no respiratory distress, high color but no rash, alert and well hydrated. The temperature was 101.4 F. rectal, pulse 100, respirations 22, blood pressure 94 systolic over 68 diastolic. The eyes and ears were negative. The nasal mucosa was injected. The mouth was clear. There was mild nuchal rigidity and no cervical lymphadenopathy. The lung fields were clear to auscultation and percussion. The heart was of normal size and contour without murmurs. The liver and spleen were not palpable, and there was no abdominal tenderness. The extremities were negative. There were no abnormal reflexes. The initial laboratory studies showed: 14.0 Gm. hemoglobin; 4,500,000 erythrocytes; 7100 leucocytes with a differential of 52 per cent polymorphonuclear cells, 44 per cent lymphocytes, 1 per cent eosinophiles and 3 per cent monocytes. The erythrocyte sedimentation rate was 5 (corrected), blood glucose 90 mgm per cent, blood urea nitrogen of 13 mgm per cent. The urine was yellow, acid, negative for sugar, albumin and microscopic. A lumbar puncture was done, and pressure before removing the spinal fluid was 80 mm. water. It was 60 mm. water after withdrawing 15 cc. of fluid. The spinal fluid showed: cell count of 4 cells, all lymphocytes. The Pandy test was negative, glucose 55 mgm per cent, protein 35 mgm per cent and chlorides of 128 milliequivelents (meq/l). A culture and smear were negative. Three blood cultures were negative.

TABLE I

NO.	CASES	AGE	DURATION OF TEMPERATURE ELEVATION IN HOURS	DURATION OF PHOTOPHOBIA IN HOURS	DURATION OF COUGH IN DAYS	RASH FADING IN DAYS	TOTAL GRAMS AUREOMYCIN	DAYS OF TREATMENT
1	G. K.	25 yrs.	12	12	3	4	7.5	5
2	D. B.	6 yrs.	12	8	8	5	6.0	4
3	M. W.	6 yrs.	20	8	3	6	4.5	3
4	J. W.	3 yrs.	24	8	5	5	6.0	4
5	M. F.	4 yrs.	16	6	5	6	6.0	3
6	R. W.	3 yrs.	24	8	16	6	6.0	4
7	F. M.	5 yrs.	20	6	12	5	6.0	4
8	K. C.	4 yrs.	16	8	20	6	4.5	3
9	A. W.	6 yrs.	24	12	8	7	4.5	3
10	P. W.	2 yrs.	20	8	8	6	4.5	3
11	R. M.	5 mos.	10	4	2	6	3.15	3
12	C. W.	8 yrs.	28	0	2	8	6.0	3
Controls—Untreated								
1	E. C.	6 yrs.	120	96	15	6		
2	C. J.	4 yrs.	120	76	22	7		
3	W. W.	3 yrs.	98	76	5	6		
4	J. C.	4 yrs.	116	84	50	6		
5	O. M.	3 yrs.	90	60	0	7		
6	F. T.	5 yrs.	72	48	8	5		

The patient's course was febril on January 17 and 18 with pulse and respiration rising. On January 19 Koplik spots were noted in his mouth, and he had developed marked photophobia and conjunctivitis. At 4 P.M. he was put on 0.25 Gm. of aureomycin per os every 4 hours. By midnight the photophobia was gone, his temperature was 99.2 F rectal by 8 A.M. on January 20. His rash developed fully and began to fade on January 23 and was almost gone by January 24. Figure 1.

Case 2. R. M. a 5 month old white male was admitted to the pediatric service on April 21, 1949 with a chief complaint of high fever, dyspnea, restlessness and a rash of 1 day duration. The rash began on the face and spread to the neck, shoulders and trunk. There was a history of exposure to rubeola 10 days prior to the onset of his illness. He had no immunizations.

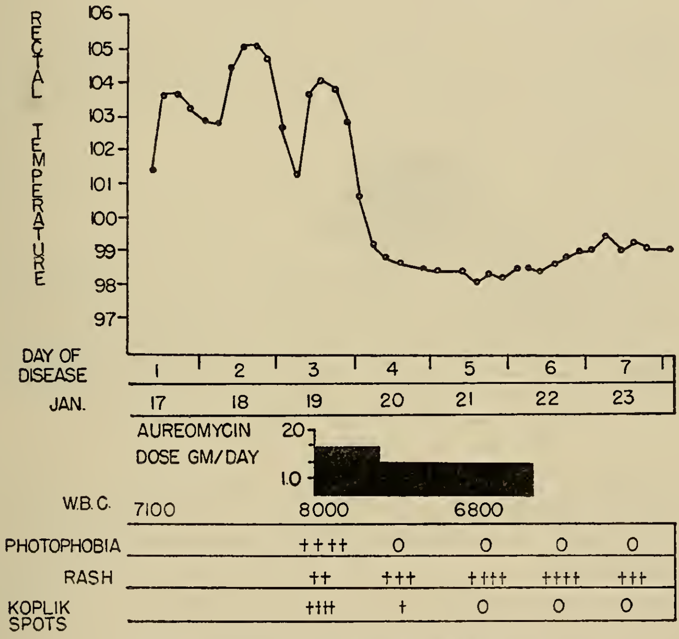
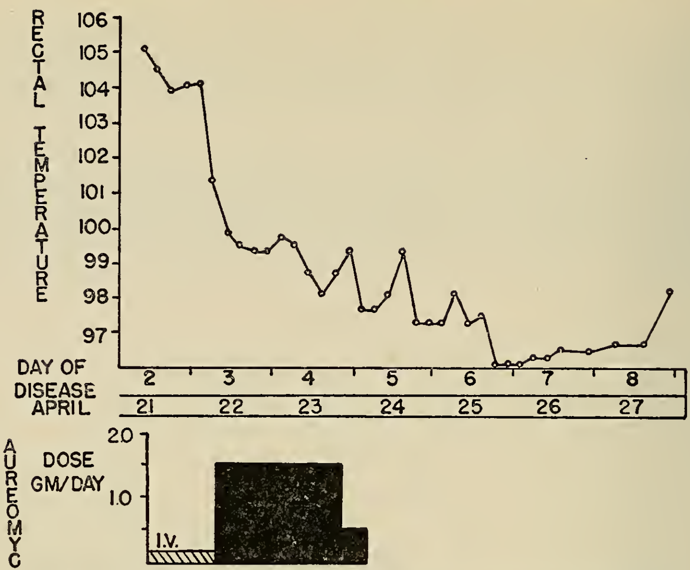


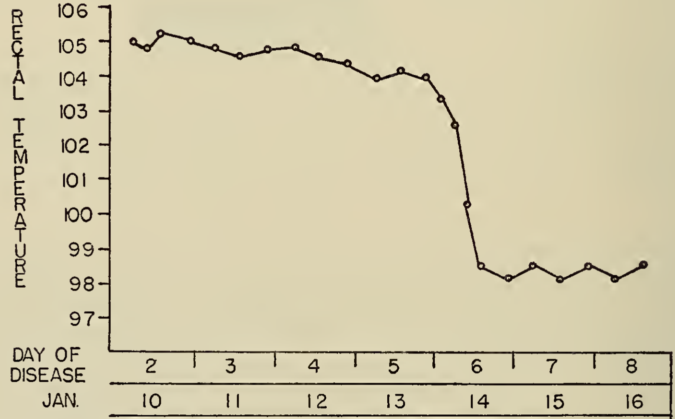
Fig. 1 Patient M. F., Age 5 Yrs., 14 Kgm.

The physical examination revealed an acutely ill male infant with a respiratory rate of 60, pulse 110, rectal temperature 105 F., blood pressure 86 systolic over 50 diastolic weight 4 Kg. There was cyanosis and marked dyspnoea. There were fading Koplik spots in the mouth and a blotchy morbilliform rash on the face, trunk and extremities. The lung fields showed an impaired percussion note at the left base and at the right upper lobe. There were fine inspiratory and expiratory rales over the above described areas. There were photophobia and conjunctivitis. The rest of the physical examination was essentially negative. The laboratory findings were: 11.8 Gm hemoglobin, 4.45 million erythrocytes; leucocyte count 12,900 with a differential count of 74 per cent polymorphonuclear cells, 24 per cent lymphocytes and 2 monocytes. Urinalysis showed one plus albumin and one plus sugar. Blood glucose of 90 mgm per cent, carbon dioxide combining power of 20 mEq/l, blood chlorides of 102 mEq/l. Agglutinations for Brucella abortus, suis and melitensis, rickettsia, typhoid and heterophile were negative. The serologic test for syphilis was nega-



W.B.C	12900		12800	13500			10500
PHOTOPHOBIA	++++	0	0	0	0	0	0
RASH	+++	++++	+++	+++	++	+	+
KOPLIK SPOTS	++	+	0	0	0	0	0

FIG. 2 Patient R. M., Age 5 Mo., Wt. 4.5 Kgm.



W.B.C	8000						
PHOTOPHOBIA	++++	++++	+++	++	+	0	0
RASH	++	+++	++++	++++	+++	++	+
KOPLIK SPOTS	++++	++	+−	0	0	0	0

FIG. 3 Patient E. C., Age 6 Yrs., 18 Kgm.

tive. Blood cultures were negative. The child was so acutely ill that it was thought advisable to begin intravenous aureomycin. An initial loading dose of 50 mgm was given at 8 P.M. and 25 mgm every 8 hours for two doses and then 0.25 Gm per os every 6 hours for eight doses. The response is seen in Figure 2. Within 12 hours the temperature was 101.2F rectal, and it was normal within twenty hours. The cyanosis, dyspnoea, and photophobia were gone within 12 hours, and the infant made an uneventful recovery and was discharged on April 28. The rash began to fade on the fifth day of the disease and was almost completely gone on discharge.

Case 3. (Untreated) E. C. a 6 year old white female was seen in the pediatric out-patient clinic of the University Hospital on January 10, 1949 with a chief complaint of a cold and fever of 2 days duration. The patient was a well developed white female, acutely ill, with conjunctivitis and nasal discharge, and she complained bitterly about the light hurting her eyes. The physical examination was negative except for a severe conjunctivitis, marked photophobia, injection of nasal mucosal and Koplik spots in the mouth. The temperature was 105 F. rectal, pulse 110, respiration 24, blood pressure 100 systolic over 72 diastolic. There was no rash. The hemogram showed a leukocyte count of 8000, with a differential 60 per cent polymorphonuclear cells, 28 per cent lymphocytes and 2 per cent monocytes. The patient was seen on January 11 with the fully developed rash of rubeola; the temperature was 105 F. rectal; photophobia and conjunctivitis were marked. She was seen again on January 12. The rash was confluent on her face; photophobia and conjunctivitis were still marked, temperature was 104 F. rectal. She was seen on January 13 with a temperature of 104F. the photophobia was diminished and the rash fading. On January 14 she was again seen when her temperature was 98.6 F rectal. Photophobia was absent, the cough worse, and the rash fading rapidly. Figure 3. She continued to cough for the next 12 days. When last seen 16 days after the onset of her Koplik spots, she was well and had no residuae.

DISCUSSION

The 12 patients treated with aureomycin and the 6 controls indicate that aureomycin apparently had a favorable effect on the cases observed. The rapidity of the disappearance of the photophobia and conjunctivitis and the fall in temperature as compared to the untreated cases is striking. The development and the clearing of the rash is apparently unaltered by the aureomycin. It has not been the authors' experience in cases of rubeola treated with penicillin or sulfadiazine to have a rapid clearing of the photophobia and conjunctivitis and such a rapid fall in temperature.

The authors believe, at least in their cases treated with aureomycin, that there was an alteration of the severity of rubeola. However, before the efficacy of aureomycin in the treatment of rubeola can be considered established, it will be necessary to have a larger series of cases. The effect of aureomycin on the developing immunity from rubeola needs further investigation.

SUMMARY

1. Twelve cases of rubeola in children of ages 5 months to 6 years who were treated with aureomycin and 6 untreated controls are reported.

The authors wish to express their appreciation to Dr. Theodore Woodward for his many helpful suggestions.

BIBLIOGRAPHY

1. Bryer, M. S., Shoenbach, E. B., Chandler, C. A., Bliss, E. A. and Long, P. H.: Aureomycin, experimental and clinical investigations. J. A. M. A. **138:** 117, 1948.
2. Finland, M., Collins, H. S. and Paine, T. F.: Aureomycin, a new antibiotic, results of laboratory studies and of clinical use in 100 cases of bacterial infections. J. A. M. A. **138:** 946, 1948.
3. Spink, W. W., Braude, A. I., Castaneda, M. R., and Goytia, R. S.: Aureomycin therapy in human brucellosis due to Brucella Melitensis. J. A. M. A. **138:** 1145, 1948.
4. Collins, H. S., Paine, T. F., Wells, E. B. and Finland, M.: Aureomycin—a new antibiotic, evaluation of its effects in typhoid fever, severe salmonella infections and in a case of Bacillus bacteremia. Ann. Int. Med. **29:** 1077, 1948.
5. Cooke, C.: Rocky mountain spotted fever treated with aureomycin. J. A. M. A. **138:** 885, 1948.
6. Ross, S., Shoenbach, E. B., Burke, F. G., Bryer, M. S., Rice, E. C. and Washington, J. A.: Aureomycin treatment of Rocky Mountain Spotted Fever. J. A. M. A. **138:** 1213, 1948.
7. Wright, L. T., Sanders, M., Logan, M. A., Prigot, A. and Hill, L. M.: Aureomycin, a new antibiotic with viricidal properties. A preliminary report on successful treatment in twenty-five cases of lymphogranuloma venereum. J. A. M. A. **1380:** 408 1948.
8. Bradey, A. E., and Sanders, M.: Aureomycin in ocular infections. J. A. M. A. **138:** 426, 1948.
9. Kneeland, Y., Rose, H. M. and Gibson, C. D.: Aureomycin in the treatment of primary atypical pneumonia. Am. J. Med. **6:** 41, 1949.

ON BEING A SCIENTIFICALLY-MINDED PHYSICIAN*

JOHN C. KRANTZ, JR.†

The sight of young men and women ready to go forth as physicians always stirs the emotions of us who serve at these altars as teachers. I congratulate you—you have completed a difficult task and have done it well. Today you stand in that great company of doctors who have gone forth from these portals to serve. You are in the distinguished company of Ephraim McDowell—the pioneer ovariotomist, James Carroll of the Walter Reed expedition, and Reid Hunt the discoverer of acetylcholine—all holding degrees from this school.

This afternoon I wish to speak to you about one facet of your mental equipment,—that is, being a scientifically-minded physcian.

In 1913 Woodrow Wilson spoke to the graduates at Swarthmore College. In his address he said that a college "served to lift the eyes of its graduates to some horizon which less-instructed men have not had the privilege to see." In a far greater sense the past four years have lifted your eyes to horizons that few people are ever privileged to see. You have stood beside men and women who were "passing through deep waters" and even "through the valley of the shadow of death." This experience broadened your sympathies, strengthened your courage and made your patience and tolerance more enduring. For men and women everywhere in distress you have developed an understanding heart.

In addition, the basic medical sciences have been a part of your training. The broad vistas of biologic chemistry have revealed to you the mystery of matter and energy. Anatomy and physiology have made you frequently stand in awe with the Psalmist and declare, "We are fearfully and wonderfully made." It is this basic scientific instruction of the last four years that I urge you to make a part of your mental armamentarium for the next forty.

Osler referred to the scientific outlook of the doctor as the leaven of science, "a little leaven leaveneth the whole loaf." It is like that first burst of azure of the morning cloud,—it covers the whole landscape with its light.

It was William Withering, that busy practitioner of Birmingham, England, who was called to treat the Dean of Brazen Nose College of Oxford University. All of the known remedies of the day were tried with no avail. Withering heard of an herb concoction used by an old woman of Shropshire in the treatment of dropsy. He threaded his way across the country-side of England to the cottage of Mrs. Hutton. He gave her golden sovereigns for the secret of the wayside flower. He found that digitalis, the purple foxglove, was the useful ingredient. It was because William Withering had the simplicity to wonder, had remained a scientifically-minded physician, that the great drug, digitalis, became a part of your armamentarium.

---

* Given at the precommencement Exercises of the University of Maryland School of Medicine. The Lyric, June 3, 1949.

† Professor of Pharmacology, School of Medicine, University of Maryland, Baltimore, Maryland.

The report of the discharge of a gun was not the occasion for alarm in Mackinac early in the nineteenth century. But on June 6, 1822, a shot was inadvertently fired, the echo of which would reverberate around the world for more than a century of oncoming time. The half-breed Alexis St. Martin was shot in the abdomen. The army surgeon, William Beaumont, was called to the scene. The patient was moribund. Beaumont's surgery was effective and St. Martin got well. The wall of his stomach was sutured to abdominal muscles and St. Martin had a gastric fistula. With this strange human test subject, Beaumont studied the process of gastric digestion. Here on the outposts of civilization, William Beaumont described so adequately the process of peptic digestion that what he observed has become the centerpiece of our knowledge about which we have set the embroidery of our present knowledge. Beaumont was a scientifically-minded doctor.

In 1890 Bernhard Naunyn, the distinguished clinician of Strassburg, observed two groups of dogs in the courtyard of the university. They were separated by a fence. The day was warm and swarms of insects were observed on the excreta from one group. With the other this did not obtain. Naunyn was curious about it; he found that the urine of the first group of dogs contained sugar. He rushed to the professor of physiology and inquired about the status of these animals. The professor said that they were depancreatized. Naunyn, the scientifically-minded doctor, had the ability to question. He proved that the site of diabetes was the pancreas. Naunyn was a scientifically-minded doctor.

Frederick Banting returned from World War I to establish a surgical practice in London, Ontario. He read the paper of Moses Barron describing the degenerative changes which occur in the pancreas when the common duct is obstructed with concretions from the gall-bladder. The germ plasm of an idea flashed through his scintillating intellect. With Charles Herbert Best at the University of Toronto, he ligated the pancreatic duct in dogs and succeeded in isolating insulin from the degenerated tissue. What event in medical history transcends the discovery of insulin? Banting was a scientifically-minded doctor; he had within him the burning fire of an insatiable curiosity.

What are the characteristics of the scientific mind which not alone become the doctor but actually adorn him? The scientific mind is insatiably curious. It never takes anything for granted. It never substitutes dogma for experiment. It stands as a mighty bulwark against self-deception. With Frederick the Great it contends that "The greatest pleasure is the discovery of a new truth, the next is to shake off an old prejudice." It is surrounded by a bodyguard of six stalwart men, so beautifully expressed in those lines of Rudyard Kipling:

I have six faithful trusting men
They serve me till I die
Their names are who and what and when
And how and where and why.

The scientific mind is buttressed with humility. Medicine provides one with the greatest charm for active minds. It provides novelty, utility and charity. And may I urge that in becoming a scientifically-minded doctor you add that noble quality of humility. Whenever you feel that you are losing your hold on humility, put a glass of water on the top of a desk. Into it plunge your index finger. Hold it there and take pride,—you have made a sizeable dent in the great universal solvent water. Now with a stopwatch in your hand, remove your finger and determine just how long the hole remains.

On Christmas day in 1642 a midwife of Woolsthrope, England, struggled to save the life of a three-pound infant. This baby was to become a great intellectual giant. He discovered the solar spectrum, the laws of gravitation, and developed differential calculus. At 80 Sir Isaac Newton said, "I have been as were a child playing on the beach, picking up some pebble here or there more variegated than the rest, while the whole ocean of truth lies unexplored before me."

The scientific mind is conditioned to change. The fundamental scientific notion of reality is that it is a process. Process implies change, not only in medicine but in all the multiplicity of our contacts and also in ourselves. It therefore contends that the zest for life lies not in the victory but in the struggle, not in the goal but in the race, not in the achievement but in the effort. Change is terrifying only to those minds which are not atuned to it. Lowell expresses so beautifully when he penned:

New experiences teach new duties
Time makes ancient good uncouth,
He must onward still and upward
Who would keep abreast of truth.

Finally, the scientific mind is best prepared for leadership, leadership which has reason for its basis rather than emotion.

A quarter of a century ago, when Mr. H.G. Wells had just finished writing his then unique book "Outline of History", he was visited by Bruce Barton, statesman and author. Mr. Barton said, "Mr. Wells, you have stood as it were upon a great mountain peak and have seen the whole caravan of human progress pass before you. You have seen countless billions of human atoms strut and fret their hour upon the stage and drop into a timeless oblivion. Who are the leaders of the world? Who are those men about whom the events of human destiny revolve?" "That is a searching question," replied Mr. Wells, "Let me cogitate upon it." In several days Mr. Barton went back for the answer. With baited breath he waited. "There are six, Mr. Barton. There is Aristotle, because of the contribution which he made to the philosophy of life. There is Buddha because he taught that happiness in life comes not from the abundance of things which a man possesses but is a condition of his mind. There is the Asiatic Emperor, Azoka, an Indian monarch called the Constantine of Buddhism. He defeated his enemies in battle and divided the spoils of victory equally among his foes and his subjects. There was Jesus of Nazareth, who gave his life for the cause he believed in. There was Abraham Lincoln who stood for the unshackling of the bodies of mankind. And last there was Roger Bacon, who taught men the art of inductive reasoning, critical thinking, the scientific spirit."

I see in these six great leaders of the world the characteristics which have been the warp and woof of medicine. The philosophy of medicine has made an inestimable contribution to human thinking. Like the great teachings of Buddha, psychiatry has contributed peace and tranquility to the spirit of mankind. For ages medicine, like Azoka, has conferred its blessings on friend and foe alike. Like Jesus, the history of medicine is replete with martyrs. For ages the practice of your art has stood for the release of mankind from the bondage of disease. And now, combining all of these characteristics of leadership, I urge you to hold fast to the contribution of Roger Bacon—inductive reasoning, critical thinking, the leaven of science.

Go with me to the Capital of California. We are standing before one of those beautiful State buildings. The lofty peaks of the Sierra Nevadas are silhouetted against the distant pearl grey sky. This engrossing caption greets our eyes, "Give me men to match these mountains." Medicine, yes this entire world, critically and urgently needs young doctors like you, prepared for leadership, with the leaven of science in your hearts, to match the scientific greatness of this your hour.

DEPARTMENT OF OBSTETRICS

A CASE REPORT*†

The patient, a 24 year old white para 1-0-0-1, was admitted to the hospital on July 1, 1949 because of increasing abdominal pain and shortness of breath. Her first pregnancy terminated at term without difficulty. The last menstrual period was January 5, 1949, and the estimated date of confinement was October 12, 1949. Her prenatal course was uneventful until June 23, 1949 when she began to "feel uncomfortable in her abdomen". This was replaced by increasing pain and later by shortness of breath.

On examination her general condition was good: pulse 90; temperature 98.6; respirations 26, blood pressure 110 systolic over 70 diastolic. The heart and lungs were negative. Her abdomen appeared to be much larger than would be expected from the duration of her pregnancy, which was estimated (by date) to be 26 weeks. The height of the fundus was 30 cms.; the abdomen was tense; no contractions were elicited; the child could not be palpated; the fetal heart was not heard. The patient stated that the baby was moving. A rectal examination revealed an effaced cervix, 2 to 3 cms. dilated. A roentgenograph of the abdomen showed a 24 to 28 weeks fetus that had anencephaly. The patient's membranes were rupured artificially and an estimated 3500 cc. of amniotic fluid escaped slowly. Five hours later she delivered a 900 grams anencephalic monster.

DISCUSSION

Hydramnios is a common complication of pregnancy. It is usually seen with anomalous babies, twins, and in diabetic patients. Its cause and mechanism are unknown and it may be acute or chronic. The latter type requires little treatment, while the former may be extremely distressing.

Acute hydramnios begins suddenly with an enlarging abdomen and increasing abdominal pain, frequently accompanied by shortness of breath. Its treatment varies with the type of baby present. If no abnormalities are seen by roentgenography (and a roentgenograph is imperative), palliative therapy with large doses of ammonium chloride and limitations of the fluid intake may be tried. This is occasionally successful. More frequently, however, the patient may go into labor prematurely or the pregnancy may have to be interrupted because distressing symptoms have increased. If an abnormality of the fetus is noted, interruption of pregnancy may be indicated. Usually the cervix is favorable for initiating labor. The membranes must be ruptured carefully with the whole hand in the vagina and the amniotic fluid released slowly. Otherwise, premature separation of the placenta may occur. After delivery, postpartum hemorrhage is a real danger.

---

* From the Department of Obstetrics, School of Medicine, University of Maryland, Baltimore, Maryland.

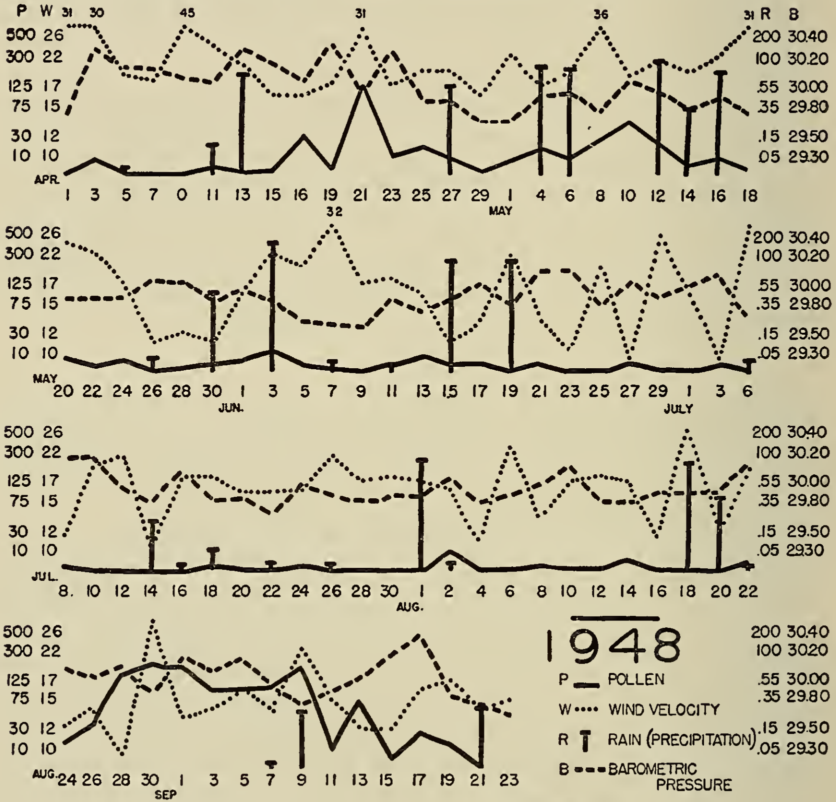
† Received for publication August 12, 1949.

POLLEN COUNTS*†

HOWARD M. BUBERT, M.D. AND SELMA R. GOLDSMITH, A.B.

BALTIMORE, MARYLAND

In accordance with practice for the past decade an annual report is herewith given upon the pollen counts for the year 1948 (1).



RAGWEED ONLY STARTING AUG. 2 PER. CU. YD. AIR

Fig. I

METHOD

The method used during 1948 deviated somewhat from previous methods. The standard sampling device recommended by Durham (2) and as accepted by the National Pollen Survey Committee of the American Academy of Allergy (3) was used.

---

* From the Section of Allergy, Department of Medicine, School of Medicine, University of Maryland, Baltimore, Maryland.

† Received for publication July 12, 1949.

Attention should be called to the fact that the committee recommended 2 collection media and staining techniques and that the second one offered, namely, glycerin jelly with methylene blue was the one employed in this instance. In addition it is of interest that, whereas the pollen slide holder was above the roof of the building it was felt that its location was not satisfactory because of the high buildings in the immediate vicinity. After the close of the pollen seasons of 1948, a new location was selected and this will probably be adequate for all purposes.

In counting the tree and grass pollen slides the method used in previous years was followed, namely, the number of pollen grains found on 1 square centimeter of slide area. In the case of the ragweed pollen, however, the conversion factor (3.6) as recommended by Durham (2) and accepted by the Pollen Survey Committee (4) was used. Thus, the ragweed is expressed in terms of the number of grains occurring in one cubic yard of air rather than that amount found on one square centimeter of the slide.

BIBLIOGRAPHY

1. Bubert, H. M. and Goldsmith, Selma, R.: Pollen counts. Bull. School Med. Univ· Maryland **33:** 103, 1948.
2. Durham, Oren C.: The volumetric incidence of atmospheric allergens. IV. A proposed standard method of gravity sampling, counting, and volumetric interpolation of results. J. Allergy **17:** 79, 1946.
3. Preliminary report of the National Pollen Survey Committee of the American Academy of Allergy on proposed standardization of pollen counting techniques. J. Allergy **17:** 178, 1946.
4. Report of National Pollen Survey Committee of the American Academy of Allergy on a conversion factor for gravity slide counts. J. Allergy **18:** 284, 1947.

PROCEEDINGS
of the
University of Maryland Biological Society

Officers of the Society

Vernon E. Krahl, *President*
School of Medicine
Baltimore, Md.

Donald E. Shay, *Treasurer*
School of Pharmacy
Baltimore, Md.

R. Dale Smith, *Secretary*
School of Medicine
Baltimore, Md.

Ronald Bamford, *Secretarial Representative*
Department of Botany
College Park, Md.

Councilors
F. H. J. Figge
W. E. Hahn
M. A. Andersch
G. P. Hager

A meeting of the Society was held on Wednesday, April 27, 1949. A paper was presented by Vernon E. Krahl entitled, "The Incidence and Inheritance of the Palatine and Mandibular Tori." R. Dale Smith gave a paper entitled, "The Effect of Freezing on Striated Muscle." Abstracts of these papers follow:

THE INCIDENCE AND INHERITANCE OF TORUS PALATINUS AND TORUS MANDIBULARIS

Vernon E. Krahl*

The palatine and mandibular tori are hyperostoses of the hard palate and lingual surface of the mandible. The incidence of these growths was determined in a group of 200 medical students. Approximately 24 per cent of this group had only the palatine torus, 11 per cent had only the mandibular torus, 15 per cent exhibited both types, while 49 per cent showed neither type of torus. The total incidence of torus palatinus was 39 per cent; that of the mandibular torus was only 26 per cent. Torus mandibularis usually occurs bilaterally, but is not always of equal size on both sides.

The incidence of tori was determined in the families of 125 of the students. Of those subjects with the palatine torus only about 70 per cent were from families showing one or both types of torus. Of those with torus mandibularis only, 82 per cent had one of both types of torus represented in their families. Where students had both tori, their families also had them in 60 per cent of the cases. In about 85 per cent of the cases, the students who had neither type of torus came from families without tori. The tori appear to be inherited and to be determined by a gene which is common in the population. The two types of torus do not appear to be independent in origin. Their transmission does not involve sex linkage. Some tests of the data indicate that the development of tori depends upon a simple recessive gene: others, however, indicate an inheritance through a dominant gene

---

* From the Department of Gross Anatomy: School of Medicine, University of Maryland, Baltimore, Maryland.

(or genes) of low penetrance. Further data must be obtained before this particular question can be settled.

THE EFFECT OF FREEZING ON THE STRUCTURE OF STRIATED MUSCLE

R. Dale Smith*

Striated muscles from various mammals were subjected to freezing and thawing before fixation. The muscles were frozen on a freezing microtome tissue holder or put into covered weighing dishes and placed in a pan containing solid carbon dioxide. The results were the same by either method and no great species differences were observed. After thawing, the muscles were either fixed immediately or warmed to 37 C. before fixation. Paraffin and frozen sections, stained and unstained, were observed in plain and polarized light. Such treatment produces a muscle fiber of very erratic staining pattern. Certain areas show an increased affinity for Heidenhain's hematoxylin while adjacent areas show a reduced affinity. The staining appears to be related to the longitudinal striations rather than to the cross striations. The unstained sections of frozen muscle, when viewed by ordinary light, usually show no evidence of cross striation. In polarized light the sections of frozen muscle show a more or less homogenous diffuse positive birefringence; so that the characteristic anisotropic and isotropic areas usually cannot be distinguished. Occasionally portions of fibers appear to be normal and offer the opportunity to study the normal and affected areas in the same field. The transition from normal to abnormal appears to be rather abrupt and resembles a fraying of the long fibrils. The diameter of the affected portion of the fiber is usually greater than that of the normal portion. Presumably the freezing and thawing upsets the normal distribution of the constituents of the muscle fiber.

A program meeting of the Society was held on May 18, 1949. Jack P. Saunders and Williamina A. Himwich presented a paper entitled "Distribution and Properties of a Transsulfurase Responsible for Conversion of Cyanide to Thiocyanate". An abstract of this paper follows:

DISTRIBUTION AND PROPERTIES OF A TRANSSULFURASE RESPONSIBLE FOR CONVERSION OF CYANIDE TO THIOCYANATE

Jack P. Saunders† and Williamina A. Himwich‡

The ability of various tissues of the dog, rhesus monkey, rat and rabbit to convert —CN to —CNS *in vitro* was studied. Tissues were homogenized in 10 volumes of distilled water for 5 minutes in a Waring Blendor and filtered through several thicknesses of surgical gauze. An aliquot of the homogenate was added to a system containing phosphate buffer, pH 7.6; potassium cyanide, 0.014 *M*; and sodium thiosulfate, 0.042 *M*. The mixture was shaken in a water bath at 38 C. for 15 minutes and the thiocyanate determined colorimetrically, using ferric nitrate. The thiocyanate formed by the reagents in the absence of tissue and the amounts originally present in the tissues were determined.

In terms of the ability of 1 gram of tissue to produce thiocyanate from cyanide, the tissues of the dog rank in the following order: suprarenals, liver, caudate nucleus, cerebral cortex, kidney, testis, medulla, cerebellum, spinal cord, pancreas, heart, small intestine, spleen, muscle, whole blood, erythrocytes, and plasma. In the other species studied, the liver always ranked highest in activity. No marked species difference was observed in the activity of homogenates prepared from parts of the central nervous system. Other tissue homogenates, however, showed a wide variation, the activity increasing in the following order: dog, rhesus monkey, rabbit and rat. The thiosulfate ion was the only sulfur-containing compound found capable of efficiently providing sulfur in the *in vitro* system.

---

* From the Department of Gross Anatomy. School of Medicine, University of Maryland, Baltimore, Maryland.

† Baltimore Nutrition Unit, U. S. Public Health Service, 2411 North Charles Street, Baltimore, Md.

‡ Toxicology Section, Medical Division, Army Chemical Center, Md.

The effect of separately varying time, temperature, pH and substrate (cyanide and thiosulfate) concentration was also studied. Enzyme activity increased sharply with time of incubation until 40 minutes, from which point there was only a slight increase with time. A sharp activity optimum was observed at 37 C. The pH optima for the various tissues were in the neighborhood of 9.1. Maximum activity was observed when the substrate concentration was such that the molar thiosulfate concentration was three times that of the cyanide present. No appreciable loss of activity was observed in homogenates stored for as long as 96 hours at 5 C., or in tissues kept for 4 hours at room temperature.

The enzyme is inhibited by a number of compounds including sulfur-containing compounds and cyanide. If —CN is added to the tissue homogenate before addition of thiosulfate, almost complete inhibition is effected; if the same amount of —CN is added after the addition of thiosulfate, normal activity is obtained. This suggests the possibility that a loose thiosulfate-enzyme combination is formed, which gives up sulfur in the presence of cyanide to form thiocyanate.

ALUMNI ASSOCIATION SECTION

OFFICERS

William H. Triplett, M.D., *President*

Vice-Presidents

Page Jett, M.D.
John H. Hornbaker, M.D.
John Mace, M.D.

Thurston R. Adams, M.D., *Secretary*
Simon Brager, M.D., *Assistant Secretary*
Minette E. Scott, *Executive Secretary*
Charles Reid Edwards, M.D., *Treasurer*

Board of Directors

Albert E. Goldstein, M.D., *Chairman*
William H. Triplett, M.D.
Charles Reid Edwards, M.D.
Thurston R. Adams, M.D.
Simon Brager, M.D.
Louis A. M. Krause, M.D.
Emil Novak, M.D.
Austin Wood, M.D.
Wetherbee Fort, M.D.

Hospital Council

Alfred T. Gundry, M.D.
George F. Sargent, M.D.

Nominating Committee

W. Raymond McKenzie, M.D., *Chairman*
Frank Ogden, M.D.
Robert F. Healy, M.D.
Ernest I. Cornbrooks, M.D.
Frank K. Morris, M.D.

Library Committee

Milton S. Sacks, M.D.

Representatives to General Alumni Board

John A. Wagner, M.D.
Thurston R. Adams, M.D.
William H. Triplett, M.D.

Editors

John A. Wagner, M.D.
C. Gardner Warner, M.D.

Alumni Council

Louis H. Douglass, M.D.
Lewis P. Gundry, M.D.

The names listed above are officers for the term beginning July 1, 1949 and ending June 30, 1950.

ALUMNI ASSOCIATION SECTION

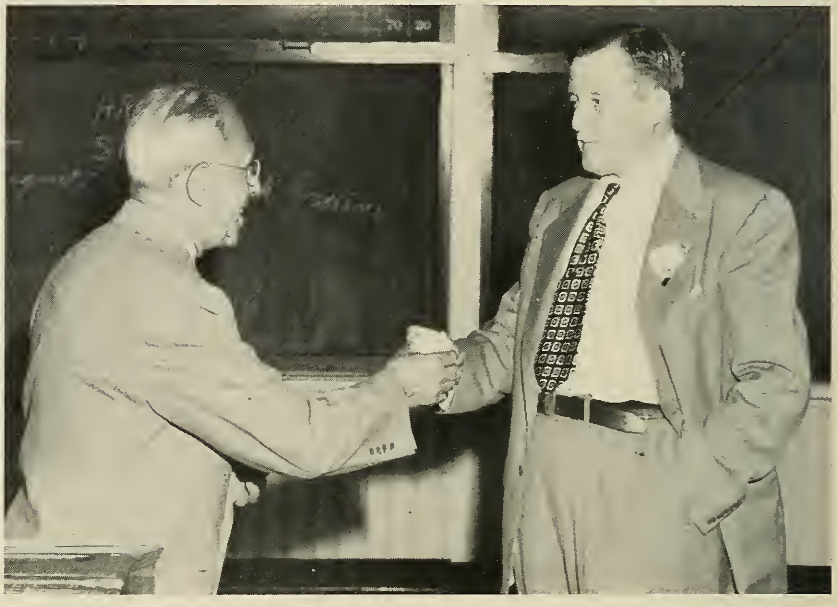
NEWS ITEMS

ALUMNI DAY, 1949

More than two hundred Alumni of the University of Maryland, Baltimore Medical College and the College of Physicians and Surgeons, some from as far as Cuba, registered at the Annual Alumni Day, June 3, 1949. Following a morning devoted to Clinics and Demonstrations by several of the Departments of the Medical School, a luncheon was served in the Student Lounge.

At the Annual meeting of the Alumni Association which followed the luncheon, the Annual Alumni Honor award and Distinguished Service Medal was presented to Dr. Nolan D. C. Lewis, Class of 1915, Professor of Psychiatry at Columbia University, College of Physicians and Surgeons and Director of the Psychiatric Institute of Columbia University. In his address of acceptance Doctor Lewis reviewed the present-day concepts of psychiatric research and carefully outlined many of the formidable problems which need solution before psychiatry can advance beyond the threshold of understanding where it now finds itself. In his discussion of these problems he presented in some detail the vast program of research now being carried on under his direction at Columbia.

Following the Alumni meeting, the Annual Banquet was held at the Southern Hotel, with the Class of 1949 as guests of the Alumni Association.



Nolan D. C. Lewis, Class of 1914 and Professor of Psychiatry, Columbia University receives the Alumni Distinguished Service Medal from Dr. Albert E. Goldstein, President of Alumni Association.

Pierson M. Checket (Class of 1941) completed his Residency in Surgery at the West Baltimore General Hospital on July 1 and is now in practice at 1801 Eutaw Place, Baltimore.

John D. Rosin (Class of 1942) was recently appointed Fellow in Proctology at the Mayo Clinic, following an assistant Residency in Surgery at the West Baltimore General Hospital.

Victor Wagner (Class of 1945) is now in practice at 40 Gifford Ave., Jersey City, N. J.

Helen A. Horn (Class of 1944) served a year as Assistant in Pathology in the Department of Pathology at the University of Maryland. After continued training at the Mount Sinai Hospital in Cleveland, and at the Baltimore City Hospitals, she was appointed to the staff of the Department of Clinical Pathology, Medical College of Virginia. Having completed her formal training in Pathology, she is now serving as Assistant Pathologist at the Mountain Side Hospital, Montclair, New Jersey.

Roy B. Turner (Class of 1944) now a Captain in the Medical Corps, U. S. Army, is in Nurnberg, Germany where he is attached to the 385th Station Hospital (APO 696, N. Y.).

John E. Savage (Class of 1932) has recently been named Chief of Obstetrics at the Hospital for The Women of Maryland, Baltimore.

Eli Lilly and Company of Indianapolis, Indiana, has awarded a grant of $9000 to Dr. John C. Krantz, Jr., Professor of Pharmacology, for the purpose of studying the mechanism of action of drugs useful in the treatment of hypertension and cardio-vascular diseases.

At the 1949 convention of the American Psychiatric Association, Dr. Benjamin Pasamanick (U. of Md. 1941), in charge of the Children's Service of the Division of Psychiatry, Kings County Hospital, Brooklyn, New York, and Associate in Psychiatry at the Long Island College of Medicine, received the first Lester N. Hofheimer Research Award of $1500. The award is offered to the psychiatrist under forty who has published the best research in the preceding three years. The work for his paper, "A Comparative Study of the Behavioral Development of Negro Infants" was done at the Yale Clinic of Child Development and appeared in the Journal of Genetic Psychology, Volume 69, pp. 3–44, 1946.

Dr. Arthur W. Erskine (B. M. C. Class of 1908) of Cedar Rapids, Iowa has been named president of the American College of Radiology at its annual meeting in Atlantic City. Dr. Erskine has previously served as president of the Radiological Society of North America, the Linn County Medical Society and the Iowa State Medical Society. He is a former chairman of the section of radiology of the American Medical Association.

RESIDENCY IN ORTHOPEDIC SURGERY ANNOUNCED

Through efforts of the Post Graduate Committee of the University of Maryland and in cooperation with the Baltimore City Hospitals, the University Hospital and the James Lawrence Kernan Hospital, a cooperative rotating Residency in Orthopedic Surgery has recently been established. Doctor John J. Tansey has been appointed to this residency and is currently serving at the Baltimore City Hospitals. The second and third years of this residency will be spent at the University Hospital and the Kernan Hospital.

Dr. Alberto Adami, (Class of March 1943) former Surgical Resident and member of the Staff at The West Baltimore General Hospital has recently been appointed Chief Resident Surgeon at the University Hospital, School of Tropical Medicine, San Juan, P. R.

CLASS OF 1914 Holds 35th Reunion

Eleven members of the class of 1914 returned to the campus for Alumni Day exercise on June 3. Nolan D. C. Lewis, member of this class, was elected recipient of the Alumni Honor Award. Members of the class, now widely separated, came from as far away as Cuba, and from Florida.

Members of Class of 1914 at the presentation of the Alumni Honor Award to classmate, Nolan D. C. Lewis. Left to right: R. M. Troxler, Burlington, N. C., D. T. Williams, Newark, Ohio, Antonio Balart, Guantanamo, Cuba, L. W. Blake, Brandenton, Florida, J. Katzenberger, Baltimore, N. D. C. Lewis, New York, C. A. Young, Baltimore, A. H. Wood, Baltimore, A. R. Casilli, Elizabeth, N. J., V. L. Glover, Martinsburg, W. Va. and B. F. D'Angelo of New York.

Dr. Everett L. Bishop, (Class of 1916) Atlanta, Georgia, Professor of Pathology (Neoplastic Diseases), Emory University Medical School, was recently named Chairman of the Cancer Commission of the Medical Association of Georgia and Chairman of the Executive Committee which is advisory to the Division of Cancer Control of the Georgia State Department of Health. Dr. Bishop, immediate past president of the International Association of Medical Museums, was recently elected a member of the Association's Council.

During the seventeenth Annual Assembly of The Southeastern Surgical Congress, Dr. W. R. McKenzie (P.S. 1915) was appointed as one of the Councillors of the Congress, representing the State of Maryland.

This Surgical Congress was organized several years ago and embraced eleven of the southeastern states. Maryland and the District of Columbia were admitted as member states this year.

The executive committee for the State of Maryland consists of:

Dr. Charles Reid Edwards
Dr. George H. Yeager
Dr. Otto C. Brantigan
Dr. William F. Rienhoff, Jr.
Dr. J. H. Mason Knox III
Dr. Albert E. Goldstein

OBITUARIES

M. ALEXANDER NOVEY, M.D.

Max Alexander Novey was born in New York City, September 23, 1899. He received his early education in the public schools of Rocky Mount, N. C. and his premedical education at Johns Hopkins University, from which he graduated with an A.B. degree in 1919. In 1923 he received his degree in medicine from the Johns Hopkins Medical School. After one year of rotating internship at St. Agnes Hospital, Baltimore, he became Resident in Obstetrics at the University Hospital. His association with the Department remained unbroken until his death, and he progressed in rank from Assistant to Assistant Professor and would undoubtedly have been promoted higher had his health permitted him to continue full participation in the activities of the Department.

In 1933 he became a Fellow of the American College of Surgeons and in 1939 a Diplomate of the American Board of Obstetrics and Gynecology. He was the author of a number of articles of obstetric interest which have been published in national medical journals and which have enriched the obstetric literature.

In 1942 Dr. Novey suffered a coronary thrombosis and was totally incapacitated for some 9 months. At the end of this time he accepted a full time position with the Baltimore City Health Department as Director of the Bureau of Maternal and Child Hygiene, a department with which he had been associated on a part time basis for about 15 years prior to his illness. He also became a lecturer in Public Health Administration at the School of Hygiene and Public Health of the Johns Hopkins School of Medicine. During this time he continued the teaching of obstetrics at the University of Maryland, School of Medicine.

DR. NOVEY

On the morning of July 16, 1949, Dr. Novey suffered a second thrombosis of the coronary artery, and less than an hour later, died.

Thus, at the age of 49, there was terminated the career of one, who in every sense of the word, deserved the title of physician. His entire life was one of service, service to his patients, to the students who were fortunate enough to be taught by him and service to the community as a whole. One of his outstanding contributions to the last was his many years of faithful and devoted service as Secretary to the Maternal Mortality Committee of the Baltimore City Medical Society. It has been most gratifying to everyone practicing obstetrics in Baltimore to see the continued drop in maternal mortality which has occurred since that committee has been active.

Dr. Novey was married November 29, 1925 to Myrtle Applefeld and his married life was a particularly happy one. There is one daughter from this marriage, now 16 years old.

His loss will be keenly felt by all who knew him and everyone will feel as I do. I have lost a real friend and companion.

Louis H. Douglass, M.D.

WILFORD ANDERSON HALL COUNCILL

Dr. Wilford Anderson Hall Councill passed away suddenly at Palm Beach, Florida, on Saturday, March 26, 1949. Dr. Councill was born in Mathews County, Virginia, in 1891, having descended from an old Virginia family whose lineage dated back to Hodges Councill, who arrived in this country in the early part of the Seventeenth Century. When he was a small boy, his family moved to Baltimore, where he afterwards attended City College and entered the Medical School of the University of Maryland in 1910. He graduated with the Class of 1914, and interned at Metropolitan Hospital in New York City.

At the completion of his internship, World War I was declared, and he entered the Medical Corps of the United States as a First Lieutenant, being ordered to Fort Oglethorpe, Georgia. While there he developed a severe arthritis, which later necessitated resection of his hip and crippled him for the rest of his life.

Although severely handicapped with this infirmity, Dr. Councill continued to work in his specialty of Urology. He became Associate in Urology at the Medical Schools of the University of Maryland and at Johns Hopkins University.

He made many contributions to the Urologic literature and devised the Councill stone extractor, an ingenious device for the removal of ureteral calculi by cystoscopic manipulation, thereby saving many people affected with such calculi from open surgical removal. This instrument is now used in practically all of the Urologic clinics of this country.

Although suffering pain almost constantly on any exertion, Dr. Councill worked daily in his practice and in dispensaries, always striving to relieve others of pain, which in many instances was not as severe as his own. His many friends and patients will always remember him as a most considerate doctor with a pleasant smile, and unanimously would say his great outstanding characteristic could be described in two words—profound kindness.

John F. Hogan, M.D.

OBITUARY

Benjamin Sax (Class of 1926) was killed in an automobile accident on August 2, 1949. A native of New York, he came to Baltimore after completing his premedical training at the City College of New York. After his graduation from the University of Maryland he entered the practice of Roentgenology, becoming Chief Roentgenologist at the West Baltimore General Hospital and the Franklin Square Hospital, which posts he held at the time of his death. Doctor Sax is survived by his wife and three children.

Allen, John Joseph, Bell, Calif.; B.M.C., class of 1901; aged 74; died, December 6, 1948, of lung abscess and arteriosclerosis.

Bell, Andrew E., Mooresville, N. C.; class of 1897; aged 81; died, November 24, 1948, of pyelonephrosis.

Borden, William Benjamin, Col. U.S.A. (retired), Wayne, Pa.; class of 1906, aged 69; served during World Wars I and II; died, May 15, 1949, of metastatic carcinoma.

Clark, Haynsworth Dowling, Fort Pierce, Fla.; class of 1914; aged 56; died, January 15, 1949 of coronary thrombosis.

Copeland, Charles Elihue, Charleston, W. Va.; P & S, class of 1893; aged 81; served during World War I; died April 20, 1949.

Dart, Frederick Bond, Niantic, Conn.; class of 1923; aged 57; served during World War I; died, April 24, 1949.

Davis, Joshua Judson, Smyrna, N. C.; class of 1891; aged 80; died, January 15, 1949, while undergoing an operation for carcinoma.

Dunham, Robert Wirt, Elkins, W. Va.; P & S, class of 1908; aged 67; died, April 23, 1949.

Gatti, William John, Philadelphia, Pa.; P & S, class of 1914; aged 56; died recently, of bronchopneumonia and arteriosclerotic heart disease.

James, George Edward, Selbyville, Del.; class of 1909; aged 66; served during World War I; died, April 20, 1949, of heart disease.

Leone, Charles B., Wilmington, Del. B.M.C., class of 1913; aged 64; died, January 13, 1949, of cirrhosis of the liver.

MacCallum, Fenton Elmer, Pulaski, N. Y.; B.M.C., class of 1900; aged 72; died October 28, 1948, of coronary thrombosis.

Martin, Francis Eugene, New Martinsville, W. Va.; P & S, class of 1905; aged 67; died, December 5, 1948, of coronary thrombosis.

McCormick, G. Carville, Baltimore, Md.; class of 1890; aged 84; died, June 19, 1949, in Tampa, Fla.

Murray, Thomas J., New London, Conn.; class of 1910; aged 63; died, April 16, 1949, of hemorrhage from esophageal varices.

Pile, Philip Sheridan, Latrobe, Pa.; B.M.C., class of 1905; aged 78; died, April 11, 1949, of coronary occlusion.

Rawlings, James Emery, Daytona Beach, Fla.; class of 1904; aged 69; served in the Spanish American War and World War I; died, December 23, 1948.

Rigby, Cecil, Spartansburg, S. C.; class of 1916; aged 58; served during World War I; died, March 26, 1949, of coronary thrombosis.

Sasscer, Reverdy, Upper Marlboro, Md.; class of 1897; aged 74; died, March 28, 1949.

Shriver, Joseph K., Jr., Cambridge, Md.; B.M.C., class of 1892; aged 71; died, November 12, 1948, of coronary occlusion and hypertension.

Smith, George Lee, Morrison, Va.; P & S, class of 1892; aged 79; died, November 22, 1948.

White, Joseph Meade, Poolesville, Md.; P & S, class of 1897; aged 78; served during the Spanish American War and World War I; died, May 12, 1949, of coronary thrombosis.

Wivell, Charles Joseph, Scranton, Pa.; B.M.C., class of 1901; aged 72; died, November 26, 1948, of coronary thrombosis.

INDEX TO VOLUME 34—1949

Acidosis, diabetic, 5
Acute porphyria, 86
  case report, 86
  similarity to appendicitis, 50
Addison's disease treated with desoxycorticosterone, 7
Ammoniated mercury ointment for tinea capitis, 81
Asthma and periarteritis, 13
Atrophy, muscular, 2
Aureomycin,
  effect on rubeola, 93
  in treatment of rubeola, 89
Authorized psychotherapy hospitals, 35

Beacham, E. G., 41
Benzyl benzoate,
  characteristics and properties, 82
  for tinea capitis, 82
  formula for ointment, 83
Body potassium loss in diarrhea, 3
Bowen, C. V., 76
Bradley, J. E., 89
Bubert, H. M., 100

Case histories
  methemoglobinemia, 53
  training for psychotherapy, 36
Case reports
  leukemia, 47
  obstetrics, 99
  periarteritis nodosa, 22
  rubeola, 89
  solitary diverticulitis of cecum, 50
Causes of
  false diverticula, 49
  megacolon, 65
  methemoglobin, 54
Cecum
  solitary diverticulitis of, 49
Characteristics of
  periodic paralysis, 1
Chronic
  intracellular potassium deficiency, 3
  nephritis, 6
  renal disease, 6
Congenital megacolon, site of involvement, 68
Control measures adopted, 42
Correct method of handling lesions, 50
Cure of tinea capitis, 84
Cyanosis in neonatal period, 53

Definition of megacolon, 65
Defective intestinal absorption, 7
Desoxycorticosterone acetate
  in Addison's disease, 7
  in perarteritis nodosa, 12
  therapy in flaccid paralysis, 7
Diabetic acidosis
  loss of potassium in, 5
  sodium phosphate therapy in, 6
Diagnosis of megacolon, 69
Diarrhea
  loss of body potassium in, 3
Diet
  for megacolon, 70
  periarteritis nodosa, 14
Drake, M. E., 89
Drugs
  to increase tonus of parasympathetic nervous system, 71
  to decrease tonus of parasympathetic nervous system, 71

Electrolyte replacement therapy, 4
Essential features of lukemia, 46

False diverticula, causes of, 49
Fatty acids in tinea capitis, 80
Functional obstruction, 66

Goal of psychotherapy, 35
Goldsmith, S. R., 100

Health program for workers at Baltimore City Hospitals, 41
Hirschsprung's disease, 65
Hollingsworth, J. W., 1
Hypertension in periarteritis, 13
Hyperthyroidism, periodic paralysis in, 3

Incidence of prolapse in breech, 76
  of cord, 76
  of megacolon, 70
Increase in demand for psychiatric treatment, 34
Inducing attacks of periodic paralysis, 3
Insulin in potassium deficiency, 3
Intestinal absorption, defective, 7
Intestinal obstruction, potassium deficiency in, 7
Intoxication, potassium, 2
Intracellular potassium shifts, 4
Intravenous alimentation, prolonged, 7

Krantz, J. C., Jr., 95

Leukemia
  essential features of, 46
  incidence of, 46
  report of case, 47
  specific therapies for, 46
  urethane in, 46
Loss of potassium in diabetic acidosis, 5

Malignant nephrosclerosis and periarteritis, 13
Medical management of megacolon, 70
Megacolon, 65
  and mental defectives, 71
  causes of, 65
  definition of, 65
  diagnosis, 69
  diet in, 70
  etiology of, 65
  incidence of, 70
  medical management of, 70
  pathology of, 67
  peristalsis in, 69
  spinal anesthesia, 71
  splanchnectomy in, 72
  symptoms and signs, 68
  treatment of, 69
Methemoglobinemia,
  case history of, 53
  causes of, 54
  in infants caused by well water, 53
  treatment of, 54
Method of pollen counts, 100
Microsporum audonini, cause of tinea capitis, 80
Mobilization of blood glucose, 3
Muscular atrophy, 2

Neonatal period, cyanosis in, 53
Nephritis, chronic, 6
Neurologic conceptions of megacolon, 66
Neurogenic dysfunction, 66
Newell, H. W., 34

Obstetrics,
  case reports, 57, 99
Organic obstruction, 66

Parasympathetic nervous system,
  drugs to decrease tonus of, 71
  drugs to increase tonus of, 71
Pathology of megacolon, 67
Periarteritis nodosa, 11
  and asthma, 13
  and diet, 14
  and malignant nephrosclerosis, 13
  case reports, 22
  desoxycorticosterone acetate in, 12
  diagnosis of, 21
  discussion of cases, 29
  etiology, 11
  history of, 11
  incidence of, 11
  pathology of, 14
  produced by drugs, 12
  produced by histamine, 13
  similarity to rheumatic fever, 12
  symptoms of, 16
Peristalsis in megacolon, 69
Periodic paralysis, 1
  characterizations of, 1
  in hyperthyroidism, 3
  use of propythiouracil in, 3
  symptoms of, 1
Pollen counts, 11
Porphyria, acute, 86
  case report, 86
  symptoms of, 88
Potassium deficiency, 1
  chronic intracellular, 3
  in steatorrhea, 7
  insulin in, 3
  manifestations of, 8
  Ringer's solution in, 8
Potassium intoxication, 2
Potassium shifts, intracellular, 4
Production of periarteritis by drugs, 12
Prolapse of umbilical cord, 76
  incidence of, 76
  treatment of, 78
Prolonged intravenous alimentation, 7
Prophylaxis in treatment, 78
Propylthiouracil, use of 3
Psychiatric clinic, 34
  staff, 34
Psychotherapy, training for, 34

Renal disease, chronic, 6
Replacement of cord, 78
  therapy, electrolyte, 4
Result of urethane, 47
Rheumatic fever, similarity to periartonitis nodosa, 12
Ringer's solution in potassium deficiency therapy, 8

Robinson, B. C. V., 80
Rubeola, aureomycin for, 89
  case reports, 89
  effect of aureomycin, 93

Scientifically-minded physicians, essay on, 95
Serum potassium, 2
Severe dehydration, 3
Shipley, E. R., 65
Site of involvement, congenital megacolon, 68
Skitarelic, B., 46
Sodium phosphate therapy in diabetic acidosis, 6
Solitary diverticulitis of cecum, 49
  difficulties to diagnose, 50
Specific therapies for leukemia, 46
Spinal anesthesia, method of treating megacolon, 71
Splanchnectomy in megacolon, 72
Steatorrhea, potassium deficiency in, 7
  potassium deficiency in, caused by, 7
Stewart, G. A., 49
Straight, W. M., 11
Symptoms and signs of megacolon, 68
  of periodic paralysis, 1
  of periarteritis nodosa, 16
  of porphyia, 88

Tinea capitis,
  caused by microsporum audouini, 80
  cure of, 84
  use of benzyl benzoate, 80
Training program, 35
Training for psychotherapy, 34
Treatment
  for megacolon, 59
  of methemoglobinemia, 54
  of prolapse, 78
  tinea capitis with benzyl benzoate, 83
Tuberculosis control, 42
  program now in effect, 42
Types of diverticula, 49
Tyrothricin and benzyl benzoate in tinea capitis, 82

Umbilical cord, prolapse of, 76
Urethane, (ethyl carbamate), 46
  action of, 46
  in leukemia, 46
  results of, 47

Return this book on or before the last
date stamped below

Does not circulate.

Library Bureau Cat. no. 1174